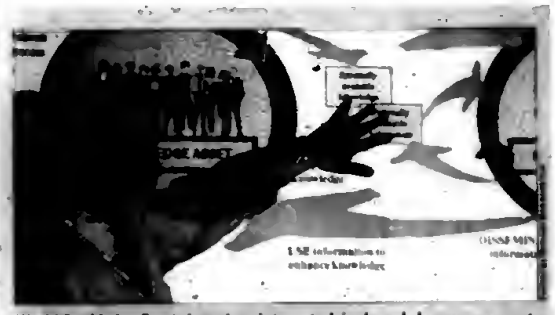
The Newspaper of Information Systems Management
July 1, 1996, Vol. 30, No. 27, 94 Pages, $6/Copy, $48/Year

COMPUTERWORLD



World Bank's Ian Scott shows how intranets drive knowledge management

Intranet fever

By Randy Weston and Kim S. Nash

CEOs are latching on to the intranet idea like early birds at a yard sale and putting pressure on information systems departments to deliver.

That was the sentiment of many of the 125 attendees at *Computerworld*'s Intranet '96 conference in San Jose, Calif., last week.

"Even though management feels like it's been hosed before [by overhyped technology], they're coming back for more. This astounds me," said Chris Dallas-Feeney, a consultant at Booz Allen & Hamilton,

Intranet, *page 15*

LeRoni Allen, Tinex Consulting

George Brenner, MCA

Susan Unger, Chrysler

Mac clones take flight

By Lisa Picarille

Last week's decision by the world's largest Macintosh site to purchase 3,000 Macintosh clones could signal an upturn in the overall Macintosh market, even though it won't have an immediate impact on Apple's bottom line.

Lockheed Martin Astronautics, a Denver-based division of Lockheed Martin Corp., announced its purchase of 3,000 Macintosh clones from start-up Power Computing Corp., the first licensee of Apple Computer, Inc.'s Mac OS. The parent company uses more than 40,000 Macintoshes.

Terms of the deal, the largest sin-

Mac clones, *page 89*

Newspaper

Policing the 'net

IS told usage guidelines best bet to avoid intranet chaos

By Kim S. Nash

Nearly anyone with a World Wide Web browser and a PC linked to the company network can start a small intranet or access other departments' intranets. That ubiquity is alluring, but it is also dangerous.

A succinct written policy is critical to controlling the chaos an intranet can spark, users and analysts said.

The problem is that employees might put things on personal home pages that offend co-workers. Departments might fight over who "owns" information. Others might lose interest in the project and let intranet data go stale.

"We're happy [that] people are enthused about this stuff, but we don't want the whole thing to go haywire," said Ross Skinner, manager of information systems infrastructure at Del Webb Corp., a construction company in Phoenix.

Skinner recently met with legal, human resources, auditing and other departments at his firm to hammer out a usage policy that specifies, for example, which users can access what data.

In hindsight

But most shops are building applications first, then retrofitting policies after studying just how their intranet gets used and, in some cases, abused.

LSI Logic Corp., for example, is busy yanking copies of PointCast, Inc.'s news feeder screen saver from intranet users' PCs. PointCast — which regularly downloads weather, business news, sports scores and other data from the Internet to user desktops — nearly ground LSI's 4,000-user-

Policing the 'net, *page 89*

Sales tools will get integrated face-lift

By Julia King and Mindy Blodgett

Consider this: More than three quarters of the companies that install sales automation software are dissatisfied with their systems. And 61% of those implementations fail to produce any measurable benefits whatsoever.

But wait. There's more.

Despite that lousy record, the overall market for sales automation systems will balloon to $1.5 billion this year — up about 40% from 1995, according to Gartner Group, Inc. in Stamford, Conn.

DuCharme's Jon Sweet *says consultants saved the day at his firm*

What's the point?

The $64,000 question is, "Why?"

The answer may be found in a new generation of tightly integrated sales tools that streamline the process of converting live prospects into done deals. Users are buying them in hopes of generating millions of dollars from sales that now fall between the cracks.

Implementations fail often, industry analysts said, because many users buy first-generation products — such as contact management systems — that provide administrative assistance but aren't true sales tools.

Sales tools, *page 16*

WHAT'S INSIDE

- Webmasters make do: Online commerce requires lots of manual labor. See story, page 6, *by Mitch Wagner.*
- An ultrathin removable hard drive that can be swapped between laptop and desktop PCs is set for fall release. See story, page 6, *by Justin Hibbard.*
- Delta Air Lines has decided to fly its IS operations solo, ending a joint venture with NCR. See story, page 8, *by Thomas Hoffman.*
- Internal communications, productivity targets and vendor partnerships are key to successful outsourcing deals, according to speakers Linda Hallman and Michael Roth at an outsourcing conference last week. See story, page 8, *by Thomas Hoffman.*

Hallman

Roth

- Dun & Bradstreet Software finds a buyer – finally. Users OK with sale to Dun Capital, Inc. See story, page 10, *by Julia King.*

A PUBLICATION OF IDG

Inside Computerworld

July 1, 1996

News

NEWS

10 **D&B Software**
Dun & Bradstreet Software finds a buyer — finally — in Bain Capital.

12 **Networking/telecom merger**
Computer telephony will drive the inevitable merger of networking and telecommunications departments.

14 **Health care privacy debate**
Putting even generic health care information on the Internet has some observers concerned about privacy and security.

25 **What a deal**
Deep discounts, aggressive promotions and low-cost starter kits become commonplace in the fiercely competitive internetworking industry.

OPINION

34 **Ah — the good old days**
It's a good thing our founding fathers didn't have to rely on technology, Paul Gillin's scenario suggests.

35 **Cyberscrubbing**
"Cyberporn is polluting our pixels," says humor columnist Michael Cohn. But he has a novel cleanup plan.

35 **Internet terminals**
Richard Finkelstein lays out a three-year time line that shows how the Network Computer will become a superpower.

This week in

COMPUTERWORLD
What's on our Web site

www.computerworld.com/realaudio

Employee productivity
THE AUDIO EDITION
Experts explore what motivates employees — it's not always more pay.

www.computerworld.com

Internet hype
Join *Computerworld* senior editor Joseph Maglitta in a debate about whether Internet hype has gone too far.

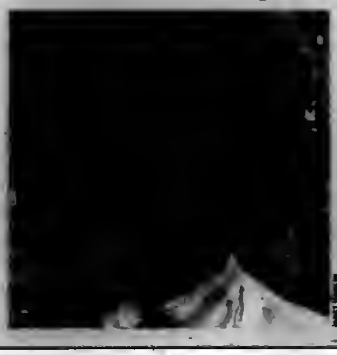
www.computerworld.com

News feature and QuickPoll
The network computer arrives.

Choice Cuts

Object lessons
Four distributed object pioneers, including Bill Edwards from Sprint, compare notes on CORBA, the Web and future enterprise systems.
In Depth, page 68

Listen and learn
Hear, hear! Great tips for better listening and super user surveys.
Managing, page 63



Technical Sections

SERVERS & PCs

39 **Videoconferencing laptops**
Intel's multimedia extensions to its 150- and 160-MHz processors will let laptops do videoconferencing.

39 **An Apple for the teacher?**
Apple is facing mounting pressure from PC competitors in the education arena.

SOFTWARE

43 **Monitoring objects**
Transaction monitor vendors try to make their software less imposing to corporate developers by adding objects.

44 **Borland's C++ tools**
Borland adds third-party object-oriented analysis and design features to its C++ programming suite.

THE ENTERPRISE NETWORK

45 **SAP-ping NetWare**
Large enterprises with 50 or more NetWare file servers often have excessive Service Advertising Protocol (SAP) packets that can slow down the network and crash the server.

48 **Merlin includes Notes**
Merlin, the next version of IBM's OS/2 Warp operating system, will include the Notes 4.0 Mail client.

THE INTERNET

53 **Connecting up**
Linking to the 'net? There are even more choices now with the advent of network computers.

54 **Get your news here**
Two new products provide custom news for intranet users.

CORPORATE STRATEGIES

57 **This network's healthy . . .**
The British Columbia Ministry of Health expects a six-month payback on a $15 million TCP/IP network.

57 **. . . and this one munches data**
Blue Cross/Blue Shield of Rhode Island moves more of its information into a multidimensional database.

Features

MANAGING

63 **Listen and learn**
Techniques for becoming a better listener and the secrets of successful user surveys.

IN DEPTH

68 **Distributed objects**
The ups and downs of moving to distributed objects.

CAREERS

71 **Read this**
Career-oriented books to add to your summer reading list.

MARKETPLACE

81 **Notes add-ons**
A consolidation seems likely in the Notes add-on market.

FINANCE & INVESTING

85 **IPO mania**
This year is outpacing 1995, which set a record. Here's how a few of the high-fliers have performed so far.

Etc.

Company Index	87
Editorial/Letters	34
F.Y.I.	66
How to contact CW	87
Inside Lines	90
Stock Ticker	86

IS YOUR BACKUP TOUGH ENOUGH FOR THE JOB?

Is your critical data guarded by a puny backup solution that doesn't scale up? Backup Express™, new from Syncsort, is fast and powerful, designed specifically for today's distributed networks, where the data grows every day. Backup Express™ backs up and restores gigabytes of data fast—whether on UNIX, NetWare, or Windows NT. If you want a backup strong enough to keep your network data secure and bring it back fast, call us.

syncsort

Tel (201) 930-8200 dept. 76CWB
Fax (201) 930-8290 dept. 76CWB
http://www.syncsort.com

©1996 Syncsort Incorporated. All trademarks are property of their respective owners.

Information Age index

IDC and World Times have developed an index that measures the ability of people in 55 countries to access, adopt and absorb information technology. Below is a sample of the countries categorized by their pace toward achieving an IT-oriented society.

Roller Bladers	Reaching a new level of "information empowerment"	U.S.	5,107
			4,003
Sliders	Making long-term technology investments with a mix of caution, conviction and consistency	Denmark	3,842
		Australia	3,704
		U.K.	3,148
		Germany	2,970
		Japan	2,970
Sprinters	Showing steady growth, but obstacles remain	Ireland	1,922
		Spain	1,872
		Russia	1,041
Jaggers	Showing spurts of uneven growth and oscillation	Malaysia	990
		Brazil	961
		Saudi Arabia	850
		China	335

The index has 20 technical and social variables, including PCs installed per capita, software and hardware spending, Internet hosts per capita, telephone lines per household, telephone faults per line, school enrollment, press freedom and civil liberties.

Source: International Data Corp., Framingham, Mass.; World Times, Inc., Boston

altcw

1996 Marin County Fair

http://marin.org

Yee-haw! The 10,000-year-old business of agriculture meets the World Wide Web at the home page (**marin.org**) for the county fair this week in Marin County, Calif. Whereas traditional county fairs have livestock competitions, the Marin County event will have a contest judging multimedia presentations by kids and adults. — *Mitch Wagner*

Digital Frontiers

Just when it seemed advertising was the way to make some money on the Internet, along comes software that acts like a television commercial-zapper.

PrivNet, a start-up firm in Chapel Hill, N.C., has developed software that allows 'net surfers to block unwanted graphics, including advertisements, to speed up the downloading of World Wide Web pages. A beta version of Internet Fast Forward, the plug-in browser software, can be downloaded for free from www.privnet.com. — *Mitch Betts*

[illegible]

Ontrack Data Recovery in Eden Prairie, Minn., specializes in recovering data from hard drives damaged by natural or man-made disasters. Here are a few true stories from Ontrack's files:

An Ontrack engineer *inspects a damaged hard drive*

- One customer guessed that maybe his hard drive didn't work because it had been "sitting in a snowdrift by the barn for a while."
- Another customer, concerned that he would void the warranty if he disassembled his hard drive by removing the screws, used a hacksaw instead.
- An Ontrack representative told a customer to pack his hard drive in peanuts for protection during shipping. The drive arrived the next day packed in salted peanuts — instead of foam peanuts.
- Another drive arrived smelling fresh and clean, wrapped in Bounce fabric-softener sheets. The customer had been told to pack it with antistatic material before shipping.

The Big Chip

The city of San Jose, Calif., has broken ground on a $59 million Tech Museum of Innovation to open Nov. 1, 1998. The museum, now in temporary quarters, has exhibits such as the Big Chip, a greatly enlarged look at how a microchip calculates and processes information. The exhibit — the size of a billiard table — can determine the day of the week for any given date. Visitors can order the chip to do the calculation in real time or slow down to 90 seconds so they can see the process. Silicon Valley legend William Hewlett is a backer of the museum.

The strangest things appear in

Wanna get a shirt like this?

News shorts

Microsoft to upgrade Visual C++, add product

Microsoft Corp. will launch an update of its Visual C++ and a new C++ product at a developers conference this month.

The new product, which will be geared toward SQL database programmers, will be based on the version update, according to Joe Quagliani, group product manager at Microsoft's C++ division.

"It's just the first step," Quagliani said. He said he expects there will be several enhancements to the C++ product line this year. "We need to have some products that are more directly meeting the needs of corporate developers.... We have lots of plans. That's the first increment."

Quagliani said the product's high level of integration with the server sets it apart from the version update. "It is so sufficiently different that it is a subspecies," he said.

The new product and version update will be launched at Microsoft's Visual C++ Developers Conference July 22-24 in San Francisco.

HP trims price of its Pentium Pro Vectra PC line

Hewlett-Packard Co. recently cut the price of its dual Pentium Pro-based Vectra XU PCs up to 10%.

Street prices for the Vectra XU 6/100 start at $3,780, 6% lower than its previous price of $4,004. At the high end, the Vectra XU 6/200 with a 2G-byte hard drive now costs $5,142, 9% lower than its previous price of $5,626.

The company said it is passing along reductions in the cost of memory and components to its customers.

The newly discounted Vectra XUs are available at authorized HP dealers, resellers and distributors.

Rumors of weak earnings fuel Digital stock sell-off

Digital Equipment Corp.'s stock tumbled last week amid persistent rumors of a weaker-than-expected current quarter. Late last week, Digital shares fell to a little more than $41 after industry analysts predicted that profits could fall well below estimates. If predictions bear out, it will be a stinging setback for the company's turnaround attempts. Digital had reported a string of profitable quarters.

Verity still seeks profits, but revenue rises

Verity, Inc. closed this fiscal year with $30.7 million in revenue, a 93% increase from revenue of $15.9 million last fiscal year. The Mountain View, Calif., search engine developer posted a net loss of $313,000 for this fiscal year, an improvement from the $5.8 million net loss registered in fiscal 1995.

For more **News shorts**, *see page 8*

Oracle Wins 11 of 14 Golds in Computerworld Application Tools Survey

Oracle Designer/2000
Best Technology

Oracle Developer/2000
Best Technology

Oracle Designer/2000
Best Service/Support

Oracle Designer/2000
Best Price/Performance

Oracle Designer/2000
Best Documentation

Oracle Designer/2000
Most likely to purchase

Oracle Designer/2000
Prefer to do business with

Oracle Designer/2000
Installed in Company

Oracle Developer/2000
Best Service/Support

Oracle Developer/2000
Best Documentation

Oracle Developer/2000
Prefer to do business with

When *Computerworld* surveyed 1,500 information technology professionals, they named Oracle's Designer/2000™ and Developer/2000™ their #1 choice in these application development categories. That's because Designer/2000 and Developer/2000 provide the most powerful tool suite for developing client/server and web applications, which scale from the workgroup to the enterprise.

For award-winning client/server application development and a copy of the *Computerworld* study, call 1-800-633-1071, ext. 8134 or find us on the Web at http://www.oracle.com/

ORACLE®
Enabling the Information Age™

©1996 Oracle Corporation. Oracle is a registered trademark and Oracle7, Designer/2000 and Developer/2000 are trademarks of Oracle Corporation. All rights reserved.
Award results based on Computerworld I/S Brand Preference Study published in April 1996. All other company and product names are the trademarks of their respective owners.

Hey kids, let's put on a Web site

Companies are using old-fashioned technology to create online magic

By Mitch Wagner

Internet commerce at the Shubert Organization, a theater management firm in New York, is bolstered by more than a little stage magic and illusion. That is because the techno-dazzle with which customers interface fronts a more primitive back-end operation.

In fact, for many companies, the desire to get online fast has outstripped the available technology. Companies that want to build links between Web sites and order-fulfillment systems often have been stymied by the lack of off-the-shelf technology. Systems just now are appearing on the scene to link the Internet with back-end inventory and delivery systems.

Plenty of personnel

Flashy, high-tech multimedia sites are often backed by people who type in needed information, send electronic mail and faxes back and forth and move data around by diskette "sneakernet."

And that tends to lead to surprisingly high personnel costs.

For Shubert, which manages more than 20 theaters on Broadway and in other cities nationwide, one of the jewels in its theatrical tiara is its World Wide Web site — which it co-manages with *Playbill Magazine* in New York.

Site visitors can find a theater by using mapping software from Geosystems Global Corp., read stars' biographies or buy tickets online.

Buy tickets online? Well, not exactly. "I'm trying to think of a nice way to describe our system," said Dave Andrews, director of operations at Shubert. Pausing for thought, he finally noted "It isn't dazzling technology."

When theatergoers send in an order via an online form, they might assume that it goes to a sophisticated database to be dispatched automatically. But in fact, the order goes to a PC that sits on the desk of a phone operator, who reads the order and types it in to a terminal that feeds the Shubert Organization's mainframe-based ticket-management system.

"Companies are getting on to the Web so fast. Instead of waiting for the code to be written to bridge these systems, they are just throwing people at the problem," said analyst Michael Goulde at Patricia Seybold Group in Boston.

Indeed, personnel costs are the most expensive part of building and running a Web site. Staffing costs account for 61% of the $3.4 million first-year costs of a typical transaction-oriented Web site, according to a recent study by Forrester Research, Inc. in Cambridge, Mass.

When the first Internet commerce sites were launched two years ago, Shubert was starting to replace its mainframe-based ticketing system. The new hardware will be installed this year, and the project should be completed in about two years.

Then Shubert officials will start thinking about devising an elegant interface for online ordering, Andrews said. Trying to design something now — when Internet technology is changing quickly and products are coming out fast — doesn't make sense, he said.

Security also worries online merchants. At Robert Redford's Sundance Catalog, clerks process customer orders via E-mail. The human in the loop is a security measure, said Harry Rosenthal, president of Sundance Catalog. "I do not want our whole customer database, which has credit-card numbers and names and addresses, in any possible way accessible to a cracker on the Internet," he said.

Many 'net sites are held up by Scotch tape at the back end, because the need for more elegant systems isn't pressing. Orders so far are coming in slowly over the Internet.

Swappable drives due

By Justin Hibbard

Western Digital Corp. is gearing up for the release in September of an ultrathin removable hard drive that can be swapped between laptop and desktop PCs, *Computerworld* has learned.

Removable storage

The technology is licensed from JTS Corp. in San Jose, Calif. JTS already is shipping its version of the drive, code-named Nordic, to Compaq Computer Corp. for fixed installation in forthcoming laptops, said Steve Kaczeus, chief technology officer at JTS.

In its removable form, the passport-size drive fits in to a PC docking bay and does everything a fixed hard drive does, from running the operating system to storing data. Business travelers will be able to move the drive between desktops and notebooks. Multiple users will be able to share one PC but use different hard disks. Western Digital CEO Charles Haggerty estimates the price will be between $200 and $300.

Problems solved

John Reeder, an analyst at Rocker Partners in New York, said the swappable hard drive is one of the best removable storage products he has seen. "It solves the performance issue and the portability issue," he said.

The performance issue has plagued major players in the removable storage space. For example, market leader Iomega Corp. faults competitor MKE Ltd. for the slow rotation of MKE's LS-120 drive. LS-120 proponents, in turn, criticize Iomega's Zip drive for its power consumption.

The JTS drive transfers data almost 12 times as fast as the Zip and more than 29 times as fast as the LS-120, Kaczeus said.

Nordic's specs

- Data transfer rate: 16.6M bytes/sec.
- Seek time: 14 msec
- Capacity: 1G byte
- Mean time before failure: 250 hours
- Cache buffer: 128K bytes
- Dimensions: 10.5mm x 90mm x 120mm
- Rotation speed: 4,103 rpm
- Power consumption: 5V

Informix development tool won't ship until December

By Dan Richman

Informix Software, Inc. will disappoint users who are coming to Chicago July 9 hoping to take home Version 3.0 of its New Era development tool.

The new version, which Informix senior marketing manager Ann Buzbee said in February was "absolutely certain" to ship in June, will now ship in December.

> "It sounds like a great product, probably worth waiting for."
>
> — Fred Hubbard, Informix User Group, Northern California

Informix's premier graphical tool is being reworked to produce applications that will run under Windows 3.1 because it hasn't been replaced by Windows NT and Windows 95 as rapidly and widely as Informix had anticipated, Buzbee said.

The tool also has to be revamped to accommodate the nonstandard data types used in Informix's object/relational database management system, Illustra Server.

Informix's OnLine relational DBMS will be merged with Illustra Server by year's end.

"I had really hoped it would be available sooner, but it sounds like a great product, probably worth waiting for," said Fred Hubbard, president of the Informix User Group of Northern California.

Buzbee said New Era 3.0 will support Sun Microsystems, Inc.'s Java development language.

She promised offer more details about that support next week at the 1996 Informix Worldwide User Conference & Exhibition.

Product merger

The Illustra/Informix merger also is on users' minds. Analysts have expressed doubt that the merger can be accomplished on schedule. But some users said they don't mind if it can't.

"Using the Web to store Braille books and talking books in digital form could be fantastic for us," said a database administrator at a major legislative agency in Washington. "But we're certainly in no hurry. We want to wait until the technology is really solid."

Corrections

The article "Can domain names be copyrighted?" [CW, May 13] said Juris, Inc. asked a federal judge in a copyright lawsuit to bar another company from using the Internet address juris.com. It is a trademark infringement suit, according to Juris' legal counsel.

*****

The article "Users find clear road in migration to RISC" [CW, May 20] misstated a characteristic about certain AS/400 programs that need to be recompiled to work with RISC machines. Software programs rewritten in "nonobservable" mode must be recompiled to their original "observable" condition, according to officials at IBM.

INTEGRATE LEGACY SYSTEMS INTO CLIENT/SERVER. CUT DEVELOPMENT COSTS BY A THIRD. AND DELIVER THEM TO 12,000 USERS. NEED A HAND?

[illegible]g Enterprise Systems through [illegible]y Systems Asset Management.

With Legacy Systems Asset Management, you have what it takes to leverage the incredible value in your legacy systems. You can maintain mainframe systems with powerful PC development tools. Identify and fix Year 2000 problems. Add Windows® or OS/2® front ends. Offload business processes to network or UNIX servers. Migrate CICS applications to UNIX,® Windows NT or OS/2. Bridge departmental 4GL applications to enterprise COBOL and CICS. Or even selectively re-engineer legacy systems for client/server and the Worldwide Web. Start small or big, go fast or slow. The choice is finally yours with Legacy Systems Asset Management tools and services from Micro Focus.

Learn more about Micro Focus' offloading, rehosting and client/server solutions and recieve a free analyst's report on transforming legacy systems by calling 1-800-632-6265, or visit us at http://www.microfocus.com.

Transforming Enterprise Systems **MICRO FOCUS®**

©1996 Micro Focus. Micro Focus is a registered trademark of Micro Focus Limited. All other company and product names are trademarks of their respective owners.

Insiders talk outsourcing

By Thomas Hoffman
NEW YORK

When The Mutual Life Insurance Company of New York (MONY) farmed out IS 18 months ago, it relieved itself of the functions but not their management.

Even though MONY sent 330 information systems staffers to Computer Sciences Corp., the New York insurer has had to deploy nine full-time employees to manage the relationship with the El Segundo, Calif., service firm.

"I lost a lot of sleep over this issue [whether to outsource]," said Michael I. Roth, chairman and CEO of the 153-year-old insurer. "If you give up control, is everything going to work the way you want it to?" Roth was the keynote speaker at *BusinessWeek's* Smartsourcing: Impact and Implementation conference here last week.

MONY's Michael I. Roth *said giving up control was a tough decision*

He said the outsourcing arrangement has enabled MONY to move more quickly into data warehousing and mobile computing.

Outsourcing clients who spoke here acknowledged they have had to grapple with a slew of slippery subjects that include cultural changes and getting vendors to commit to guarantees of cost savings and/or productivity gains.

Du Pont's Cinda A. Hallman *says an outsourcer should meet company productivity objectives*

Saving money

For most companies, cost savings are still the driving force behind outsourcing. That was true at Occidental Chemical Corp. in Dallas, which awarded its data center operations in 1990 to an internal group that formed an independent entity.

With its back against the wall, Occidental's IS group submitted a bid that was $14 million less than bids from Electronic Data Systems Corp., IBM and Perot Systems Corp.

Occidental Chemical, a subsidiary of Occidental Petroleum Corp., slashed its data center costs from $30 million to $15.4 million per year, which created savings of more than $72 million during the course of the five-year deal, said Edward A. Barrows, vice president of information services.

Before Xerox Corp. handed EDS $3.2 billion to run its legacy processing in 1994, the Stamford, Conn., company talked to more than 50 firms that had outsourced some or all their IS activities.

"The trend we found is that the successful companies knew what they were going to do the day after" the deal, said Jagdish R. Dalal, vice president of information management at Xerox.

Some outsourcing customers said they force vendors to meet specific productivity and cost-savings targets before they will pay them. One of them is Du Pont Co., which is exploring what could become a $6 billion outsourcing arrangement.

"We achieve 6% to 8% productivity improvement in Du Pont on an annual basis," said Cinda A. Hallman, vice president of IS and chief information officer. "We would expect an outsourcer to at least meet that objective."

NCR grounded in Delta venture

By Thomas Hoffman

NCR Corp. has been jettisoned from a joint information technology venture with Delta Air Lines 18 months into what was originally intended to be a 50-year partnership.

The TransQuest, Inc. joint venture this week will come under Delta's wing as a wholly owned subsidiary of the Atlanta-based airline.

Among other reasons, Delta selected NCR — formerly part of AT&T Corp. — in 1994 because of AT&T's "breadth of technologies." That included Bell Laboratories' crew optimization software, which TransQuest now owns, a TransQuest spokesman said.

The TransQuest divorce "mainly stems from AT&T's restructuring and splitting into three companies," the spokesman said. NCR will be formally spun off from AT&T by year's end.

Neither NCR nor Delta would disclose the terms of the financial settlement surrounding TransQuest. NCR held a 50% equity stake in the venture.

At the time of the joint venture, Delta transferred 1,100 information systems employees and 3,000 software applications to TransQuest. NCR kicked in about 30 people, some software and an undisclosed amount of cash. TransQuest has about 2,000 employees.

Little experience

One analyst said the split has less to do with AT&T's breakup than NCR's lack of experience in large-scale professional services deals. "This deal has been going through growing pains from the start," said Allie Young, a senior analyst at Dataquest Worldwide Services Group in Westboro, Mass.

Under the original agreement, NCR received a 10-year, $2.8 billion outsourcing contract from Delta.

NCR met or exceeded all its productivity and cost-savings targets last year, the TransQuest spokesman said. For example, productivity for developing client/server systems, based on a metric of dollars-per-function point, improved 30% compared with 1994.

News Shorts

AST Research shakes up executive tier

Troubled PC maker **AST Research, Inc.** in Irvine, Calif., late last week announced the appointment of Kwg-Ho Kim as chairman. Kim is vice chairman, president and CEO of **Samsung Electronics Corp.** in South Korea, a major shareholder of AST. Meanwhile, Safi Qureshy, former chairman and co-founder of the company, will continue as a board member and chairman emeritus. He will be involved in technology direction, corporate liaison and customer relations.

Citicorp banks on Digital, EDS

Citicorp has awarded separate contracts valued at a combined $750 million to **Digital Equipment Corp.** and **Electronic Data Systems Corp.** to install and manage the bank's desktop computers and LANs. The three-year deal is worth $500 million to Digital.

McAfee licenses virus tools

McAfee Associates, Inc. in Santa Clara, Calif., last week licensed portions of its VirusScan and WebShield antivirus packages to **Microsoft Corp.** Under the terms of the pact, McAfee's antivirus code will be incorporated into Microsoft's upcoming Internet software offerings, said Dave Fester, a product manager at Microsoft. The inclusion of an antiviral package in Microsoft's Internet software is important, he said, because macro viruses — the most common bug — often hide in Internet electronic-mail attachments. Microsoft didn't give specific release dates for the product.

AT&T restarts online service

Months after **AT&T Corp.** ditched a multimillion-dollar investment in its Interchange customized online service to concentrate on the Internet, the company is offering online access to existing business information instead. AT&T Business Network in Cambridge, Mass., offers links to business news and information that ranges from *The New York Times* to the Small Business Administration.

Intel branches out into chat

Intel Corp. in Santa Clara, Calif., is adding chat to its product line. Intel, along with **Warner Music Group**, a unit of **Time Warner Corp.**, is investing in **The Palace**, a multimedia software firm that will develop chat rooms on the Web.

Lucent sells AT&T Paradyne

Making a play for the data communications market, **Texas Pacific Group** agreed last week to acquire **AT&T Paradyne** from **Lucent Technologies, Inc.** for $175 million. Texas Pacific invests in the airline, food, health care and energy industries. Paradyne, based in Largo, Fla., will continue to supply network access products to Lucent, which is financing part of the purchase.

Sabrenet outsourced

Sabre Computer Services, a unit of **American Airlines**, has outsourced its Sabrenet travel information network to service provider **SITA Telecommunications Holdings** in a seven-year, $400 million deal. Under the agreement, SITA will link its frame-relay network to Sabrenet, which is connected to more than 22,500 travel agencies, American Airlines offices and other locations.

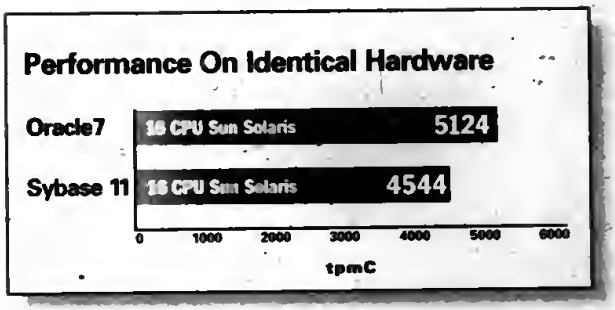
Next ships NT software layer

Next Software, Inc. in Redwood City, Calif., last week quietly began shipping its OpenStep application environment for Windows NT. The $499 OpenStep is an object-oriented software layer that allows NT users to run applications originally developed for NextStep, Next's proprietary operating system. A complete set of OpenStep development tools for NT will ship in early fall.

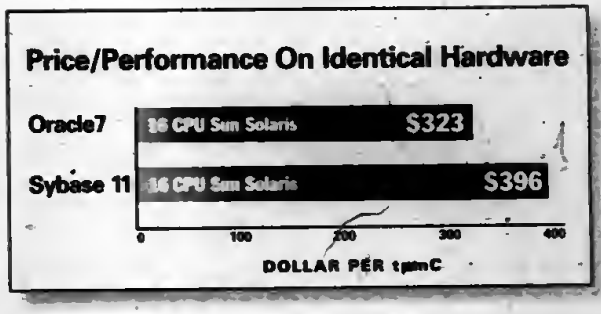
SHORT TAKES **Computer Sciences Corp.** has licensed its MHC Managed Healthcare Information System to the **Public Health Trust** of Dade County, Fla. ... **Security First Network Bank**, an Internet-based bank in Atlanta, has developed an online banking center (Go Banking) on **CompuServe**. ... **Entex Information Services** has reached agreements with **Microsoft** and **Compaq Computer Corp.** to provide desktop and server migration services to Microsoft's Windows NT systems. ... **IBM** expanded a licensing deal with **Netscape Communications Corp.** to allow IBM to offer the full Netscape SuiteSpot product line on RS/6000 Unix systems. ... **IBM** is dropping an RS/6000 version of **Sun Microsystems, Inc.**'s Wabi technology for running Windows applications on Unix systems.

Oracle Universal Server

Faster



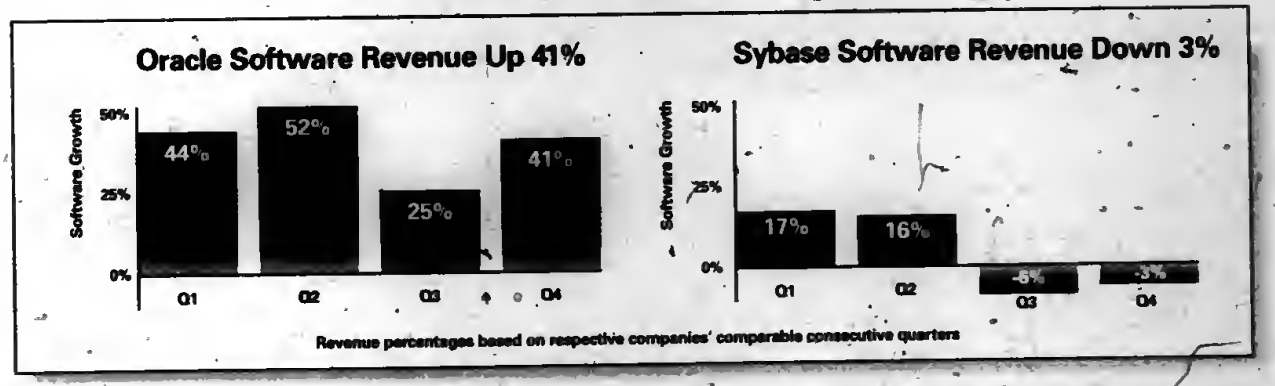
Cheaper



Better

Oracle7	Sybase 11
✔ Universal Server: Tables, Text, Image, Audio, Video	"Sybase, which has yet to discuss its plans for such a server, is viewed as lagging in this area." — Network World
✔ Parallel Server: Query, Index & Recovery	"Sybase...has scalability problems with its System 11 release." — Information Week
✔ Concurrent Server: Row-Level Locking	"Sybase System 11...does not support row-level locking." — Information Week

The Market Has Spoken



So which would you choose? Oracle. Always faster, cheaper and better. Call 1-800-633-1071, ext. 8128.
Or find us on the Web at http://www.oracle.com

ORACLE®
Enabling the Information Age™

©1996 Oracle Corporation. Oracle and Universal Server are registered trademarks, and Oracle7 and Enabling the Information Age are trademarks of Oracle Corporation. All rights reserved. TPC results as of March 1, 1996. TPC is a registered trademark of the Transaction Processing Council. Oracle 16 CPU Sun Solaris, 5,124 tpmC, $323/tpmC*; Sybase 16 CPU Sun Solaris, 4,544 tpmC, $396/tpmC. Oracle figures reflective of December 1, 1994–November 30 1995. Sybase figures reflective of January 1, 1995 - December 31, 1995. *All other company and product names are trademarks of their respective owners.

D&B Software users on sale: No Bain, no gain

By Julia King

Dun & Bradstreet Software users expressed optimism last week following the vendor's acquisition by Bain Capital, Inc., a venture capital firm in Boston.

But exactly how the sale will affect D&B Software's 1,000-plus mainframe software customers and 500 client/server sites remains to be seen.

For now, company officials insist that users should notice little, if any, difference in their dealings with the Atlanta vendor.

"We have no plans of reducing our support and service levels," said Jim Schaper, who will replace Doug MacIntyre as CEO of the new and as-yet unnamed company. "There have been no changes in the operating plan."

Bain agreed to acquire D&B Software for $160 million in cash and $50 million in stock. The deal is expected to be completed in August.

So far, users said they see good omens.

"It sounds like an investment [for Bain] and not a leveraged buyout, which means investment in new products and research and development," said Gene Wulf, an information systems manager at Bemis Corp. in Minneapolis, which uses D&B Software's SmartStream client/server software.

"Now they don't have to go hat in hand to go fight for a piece of the corporate budget. They can focus on taking an existing product and making it better," said Dick Hudson, chief information officer at Global Marine, Inc., a $500 million offshore drilling company and D&B Software SmartStream user in Houston.

D&B Software had been part of Dun & Bradstreet Corp., which put the software unit on the auction block earlier this year as part of a sweeping reorganization. Among other things, D&B Software had been late to market with a client/server offering, and when it finally shipped SmartStream in 1995, it ran only with Sybase, Inc.'s database management system.

Let's make a deal

Prior to last week's deal, D&B Software officials met with 20 other potential buyers.

But all along, D&B Software was working closely with Bain, and that is what concerns Jim Duggan, a technology analyst at First Albany Corp. in Albany, N.Y.

"Bain is quite closely connected with Dun & Bradstreet, so this has the air that Bain is the buyer of last resort," Duggan said. "This is more a financial deal than a technical deal, so I'm skeptical that this was bought to run as a business. It looks like a temporary measure."

Duggan also hinted that Bain isn't in the software business for the long haul but sealed the deal "as a bridge to help D&B close their reorganization."

MacIntyre said he will help the company through its transition but will exit once the transaction is complete.

Still on track

Product plans outlined by D&B Software earlier this year include an August release of SmartStream for Microsoft Corp.'s SQL Server 6 and a midsummer release of its enterprise workstation product, a graphical user interface (GUI) for its mainframe software.

The GUI, called CoHost, is still on target and will be formally announced next week. But D&B Software has pushed back a Microsoft SQL Server version of SmartStream until early next year. Then, it will release a version compliant with Microsoft's newer 6.5 database system.

—Julia King

Circle K Stores
efficient market services
General Mills
H.E.B. Grocery Company
Hewlett-Packard Company
Longs Drug Stores
Pharmacy Data Management
Sara Lee Intimates
Seafirst Bankcard Services
THE GOOD GUYS!
Tufts Health Plan
UCA&L
Welborn Clinic

Picture Your Data On Red Brick.™

Healthsource, a national leader in providing and insuring health care, makes strategic business growth decisions using their Red Brick data warehouse.

"With Red Brick Warehouse, we can be more productive in business and clinical management, which enables us to provide innovative products and the highest quality care possible for our covered members," says Bob Chin, CTO.

Healthsource relies on Red Brick. Shouldn't you?

RED BRICK®
The Data Warehouse Company™

1 800 777 2585 • http://www.redbrick.com • Fax 1 408 399 3277

Why so popular? It [illegible] you want [illegible] but 10 years from [illegible] Windows NT® Server [illegible] all that and more. How? There are more applications being developed for Windows NT Server than for any one flavor of UNIX. (More than 2,400 applications are currently shipping on Windows NT Server, including SAP R/3 and People Soft.*) Reality? Windows NT Server supports the most hardware platforms—5,000 systems and counting. What's more, it's the only NOS with intranet support built-in, making it the Web platform more people prefer.* (Critics also seem to prefer it, as awards like *PC Week*'s Analyst's Choice, *PC Magazine*'s Editor's Choice, and *LAN Magazine*'s Product of the Year, will attest.) And support for Windows NT Server is exhaustive. More than 50,000 people trained on Windows NT Server this year alone. So see for yourself what all the flap is about. Call (800) 426-9400, Dept. A024. Or visit our Web site at www.microsoft.com/ntserver/.

Microsoft Windows NT Server

Microsoft

WHERE DO YOU WANT TO GO TODAY?™

© 1996 Microsoft Corporation. All rights reserved. Microsoft and Windows NT are registered trademarks and Where do you want to go today? is a trademark of Microsoft Corporation. People Soft is a registered trademark of PeopleSoft, Inc. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company, Ltd. *Sentry Market Research.

Telecom, networking IS units eye merger

Migration to client/server forcing departments together

By Kim Girard

Sharp lines between networking and telecommunications departments are beginning to blur as voice and data technologies merge.

And that poses problems for companies that for years considered telecommunications and networking completely separate entities, said Chris Thompson, principal telecommunications analyst at Dataquest in San Jose, Calif.

"The two roles are still separate, and people's expectations are different in both environments," Thompson said. "The business manager is needed to make them work together."

At Northeastern University in Boston, the departments are separate. But on special projects, such as providing students with dial-up access to their grades or schedules at university kiosks, the departments work together.

"I think it's coming closer and closer [together]," said Paul Pagliarulo, director of administrative computer services. But Pagliarulo said the university's telecommunications department holds unique knowledge, particularly in dealing with contracts and vendors. And that is a good argument for its separateness.

For Barry Gillespie, network services coordinator at St. Jude Children's Research Hospital in Memphis, the time has come to bring networking and telephone services under one umbrella.

Traditionally, the hospital had little involvement with telephone services, Gillespie said. The data wires were stored in one closet, and the telephone jacks were in another.

But the hospital's planned migration from a Banyan Systems, Inc. system to a Windows NT environment spurred a move toward convergence.

"We're looking at connecting the fax to the computer, and people want to do different types of videoconferencing," Gillespie said. "The telephone switch is an important part of that."

Reasons to merge networking departments with telecommunications departments

- Convergence of voice and data technologies
- Growth of call centers
- Desktop convergence of E-mail, voice mail and fax services
- Increasing need for Internet access

Big advantages

Jim Burton, a consultant at C-T Link in Boston, said the benefits of integrating telephone and computer technologies are enormous. Call centers save money and time for companies that handle customer orders or inquiries over the phone, he said. And merging electronic mail, voice mail and fax services on one system is much easier for users.

But fear of the unknown is playing a role in the unwillingness to merge the two technologies, Burton said.

"These two groups have never communicated before, and they really don't understand each other," he said. "They've operated very differently."

Most larger corporations have already assigned one person to take charge of integrating and planning on both the information systems and telecommunications sides, said Peter Pratt, director of telecommunications research at the Business Research Group in Newton, Mass.

The change requires retraining and is often accompanied by internal battles, he said.

"It's less a merging of a job than it is a merging of staffs," Pratt said. "It's a rare breed that someone is skilled in both."

NT will wait for Novell's Cross Platform Services

By Laura DiDio

Novell, Inc. last week released initial versions of its Cross Platform Services code to Unix vendors, but users on Microsoft's Corp's Windows NT Server platform will have to wait.

The software was designed to run the seven core services of NetWare, including Novell Directory Services (NDS), on other operating system platforms.

"We are going to have NDS on Windows NT Server before the end of the year. Of course, we'd like Microsoft's help, but we're going ahead with or without them," Novell CEO Bob Frankenberg told *Computerworld*.

Novell CEO Bob Frankenberg *says NDS will be on Windows NT Server before year's end*

"The message here is that Novell Cross Platform Services gives users freedom of choice. They can keep their current network operating system or buy whatever platform they like and still get access to the seven NetWare core services," he said.

Initial licensed users of the software include Hewlett-Packard Co. and SCO, Inc. Each purchased parts of Novell's former UnixWare group last fall.

Jean S. Bozman, an analyst at International Data Corp. (IDC) in Mountain View, Calif., said NDS on NT Server is a "must do" item for Novell.

"Novell Cross Platform Services on Unix platforms is good but not enough. NDS *has* to be on Windows NT Server. IDC expects about 400,000 copies of NT Server to ship this year and nearly doubling to about 800,000 next year. That's not a wave you want to miss," she said.

An information systems manager at a large East Coast financial firm, who requested anonymity, agreed. "Our long-term plan is to migrate to Windows NT Server because it's such a strong application server. But that creates problems, since NT won't have an enterprisewide directory in Cairo for at least a year or more, so the Novell Cross Platform offering is tailor-made for us," he said.

Cairo is the next major release of the Windows NT operating system.

Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, said giving users more options is crucial.

"Users want choices. The Novell Cross Platform Services also buys them time to migrate and upgrade at their own pace. Novell recognizes that it can't hold a gun to users' heads," he said.

"Large corporations are increasingly heterogeneous; Novell has to offer peaceful co-existence," Dzubeck added.

Old problems still haunt some Novell customers. See page 45.

Symantec, Novell to add Windows NT support

By Bob Francis

System administrators looking to manage a hodgepodge of Novell and Windows NT networks will soon find an ally in Novell, Inc.

Last week, the Orem, Utah-based LAN vendor joined the growing list of system administration vendors that cater to the needs of Microsoft Corp. Windows NT users as well as Novell users.

Novell unveiled Version 2.1 of ManageWise in a bid to broaden the LAN administration software's functionality beyond strictly Novell networks.

ManageWise, which also includes Intel Corp.'s LANDesk, will support management of both NetWare and NT servers, along with a variety of desktop environments. It will ship later this summer.

ManageWise costs $795 for five users. Users of earlier versions of the product can upgrade for $400.

Net monitoring

System administrators use tools such as ManageWise to monitor their networks for CPU utilization, system functionality, performance management and configuration.

For users, the new version of Windows NT capabilities are simply a reflection of reality. "We're just beginning to add some Windows NT servers, so it was absolutely necessary that our management tools provide that," said Simon Taufique, a network administrator at New York University in New York.

The university previously used an older version of LANDesk, but it didn't have some features — such as remote monitoring — included in ManageWise, according to Taufique.

Opening more windows

Other system administration vendors that have recently added Windows NT support to their products:

Vendor	Product
IBM	Tivoli
Computer Associates	CA-Unicenter
Novadigm	Enterprise Desktop Manager
Intel	LANDesk
McAfee Associates	Sabre Software
Microsoft	System Management Server
New Dimension Software	Control-M

Bigger possibilities

Analysts said Novell's new version of ManageWise may give the product a foothold in larger sites. In the past, "Novell has been most effective in small and medium-size sites with ManageWise," said Richard Villars, an analyst at International Data Corp. (IDC) in Framingham, Mass.

Novell is not the only company targeting Windows NT networks. This week, Symantec Corp. in Cupertino, Calif., will add full support for the operating system to its Expose server management software.

Expose is part of Symantec's Norton Administrator Suite of PC LAN administration software.

The market for PC LAN administration software is increasing dramatically. This year's sales are expected to total $540.5 million, an 83% increase over last year's $295.5 million, according to study by IDC.

Everything you're looking for in PCs.

From a place you probably didn't look.

You might not think of Unisys as a place to find state-of-the-art PCs for your company. But all that's changed with *Aquanta*™ PCs and servers. This new product line matches—and even surpasses—the best the PC world has to offer.

intel inside PENTIUM PRO PROCESSOR

Aquanta means quality, with rigorous testing that ansures mainframe-class dependability for mission-critical applications.

Aquanta means performance, with one of the industry's most powarful and scalable product lines—including multiprocessor Pentium and Pentium Pro models, SMP servers and fault-resilient servers.

Aquanta means compatibility, with support for all major operating systems and networks to simplify client/server computing.

Aquanta means support, through Unisys worldwide experience implementing technology across departments, companies and countries.

And finally, *Aquanta* means this: While we may not be the first place you look for PCs, we just might be the last.

http://www.unisys.com/adv or 1-800-874-8647, ext. 244

© 1995 Unisys Corporation. Aquanta is a trademark of Unisys Corporation. The Intel Inside Logo, Pentium and Pentium Pro are registered trademarks of Intel Corporation.

UNISYS

The Information Management Company

Internet outages spark disaster fears

By Gary H. Anthes and Mitch Wagner
MONTREAL

Recent disconnects in service by Internet service providers Netcom On-Line Communication Services, Inc., America Online, Inc. and The Microsoft Network have added momentum to the debate over whether the Internet is overdue for disaster.

"These collapses will recur, repeatedly, through most of this year and into next year, probably," said Bob Metcalfe, co-founder of 3Com Corp. and now a vice president at International Data Group, a market research firm in Framingham, Mass. "They will become so frequent, that I propose we start naming them, like hurricanes, to keep track of them."

Market analysis

What next?

"The key question is can the technology ghing all this together keep up with the growth in demand?" asked Scott O. Bradner, a network specialist at Harvard University and a director of the Internet Engineering Task Force's Operational Requirements Area. "We can deal with it over the next 12 to 18 months with technology at hand; after that, we are dependent on technology we don't have."

In particular, Bradner questioned whether advances in router technology could keep pace. He said there is also some danger that service providers will run out of fiber-optic cable capacity.

Capacity demands

Bradner claimed that the major Internet service providers, such as MCI Communications Corp., have repeatedly failed to add network capacity fast enough to keep up with demand.

But MCI says it is hardly standing still. In April, it upgraded its U.S. Internet backbone from 45M to 155M bit/sec. And just last week, the company began to roll out the first pieces of a 622M bit/sec. backbone.

"Even that is not enough," conceded MCI executive and Internet pioneer Vinton Cerf at the Internet Society's Inet '96 conference here.

He said this latest upgrade will last MCI only until next March, when another big upgrade will be required.

Cerf said Internet use is exploding at the rate of 300% per year, propelled by users' demand for bandwidth-hungry, real-time applications such as videoconferencing and Internet telephony. MCI and others are likely to move to more volume-sensitive pricing to better recoup the cost of those services, he said.

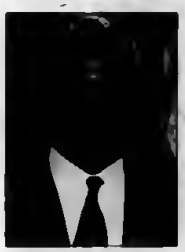
Health care's online remedy?

By Mindy Blodgett

It sounds like a good idea: Eliminate tons of paperwork by putting employee health care and benefits information on the Internet.

But health care and industry analysts cautioned that the announcement last week by Blue Cross/Blue Shield of Massachusetts that it will put health care information online leads to worrisome questions about privacy and security.

"I think the jury is out on whether this kind of information should be on the Internet," said Larry Pawola, executive vice president at Chicago-based Sheldon I. Dorenfest & Associates Ltd., an information systems consultancy for the health care industry. "I just think there are still too many security issues."



Blue Cross/Blue Shield's Russell Ricci: *With new online service, 'Everybody wins'*

The program at Blue Cross/Blue Shield of Massachusetts in Boston is the pilot for a service jointly developed with Healtheon Corp. in Palo Alto, Calif.

Healtheon is a newly formed company of which Jim Clark, chairman of Netscape Communications Corp. is a co-founder. It aims to use the Internet to simplify the health care business for insurance companies, employers, employees and health care providers.

Information online

The service, which will be available to health care providers nationally in January, will offer online information for benefits enrollment, Medicare eligibility and health plan options. Also, employees can exchange electronic mail with their doctors and check the status of insurance claims.

Blue Cross/Blue Shield won't charge employers for the service at this time. Employers would set up World Wide Web pages with links to health information that employees can access with Web browsers, said Russell Ricci, president of Blue Cross/Blue Shield's New Health Ventures unit.

Raising the red flag

The service won't make medical records available online, Healtheon and Blue Cross/Blue Shield executives emphasized. But even the availability on the Web of information such as claims status is cause for concern, observers said.

"Claims records contain tremendously sensitive data," said Janlori Goldman, deputy director of the nonprofit Center for Democracy and Technology in Washington. "I just feel uncomfortable with that kind of information on the Internet — even if it is encrypted."

"What if you told your employer you were going to the Bahamas and instead you were in rehab drying out?" Pawola asked. "You are E-mailing back and forth with your doctor some dicey information."

Jim Adams, an analyst at Gartner Group, Inc. in Stamford, Conn., was more optimistic.

"These people have a lot of credibility. It is exciting to have someone with Jim Clark's experience focus on health care information technology, which is an industry that needs a lot of help," he said.

"But at the same time, the Internet is not totally secure," Adams added.

Ricci countered that the service will use the latest in encryption technology, and he insisted there is no cause for concern.

"This will be a great service for our members, and it will cut costs for us," Ricci said. "Everybody wins."

Users push for out-of-the-box groupware

By Tim Ouellette

Some groupware users are going back to the basics.

They are turning to products that offer an out-of-the-box experience as an alternative to technology such as Notes, which requires much more customization, administration and programming.

Vendors such as Attachmate Corp. in Bellevue, Wash., and FTP Software, Inc. in Andover, Mass., are obliging users by upgrading their products to stay at least comparable to big players such as Lotus Development Corp., while still freeing users from customization requirements.

This week, for example, Attachmate will announce OpenMind 3.0, which includes World Wide Web browser access to the OpenMind server. And FTP plans an update to GroupWorks 2.1 that is likely to include an integrated electronic-mail capability, users said.

Have an open mind

Attachmate's OpenMind 3.0 offers some features of Lotus Notes, while providing simplicity.

Groupware feature	OpenMind	Notes
Discussions	✖	✖
Document management	✖	✖
Electronic publishing	✖	✖
Internet access	✖	✖
Workflow		✖
Application development		✖
E-mail	Works with MAPI* systems	✖
Full server platform support	Windows NT only	✖

Time is of the essence for these users, who don't want to wait for all the planning, consulting, installation and development required for Notes, Microsoft Corp.'s Exchange or Novell, Inc.'s GroupWise — hence the attraction to smaller, shrink-wrapped products.

Up and running

"Within minutes, [GroupWorks] was so easy to use. That was why we looked at it," said Bill McCloskey, director of quality assurance at Princeton Financial Systems in Princeton, N.J. "It was robust enough to handle our needs — project management and information sharing" without a dedicated administrator.

"The reason we wanted to use OpenMind was that we weren't really interested in [getting] the applications development capability [of Notes] — we wanted discussion databases," said Vicky Miller, director of information systems at AT&T Wireless Services, Inc. in Kirkland, Wash. "It is a good product for that purpose."

And sometimes smaller products can be better.

"In our experience, Lotus Notes doesn't work nearly as well [compared with its application features] as an unstructured, free-form discussion database," said longtime Notes user Ronni Marshak, an analyst at Patricia Seybold Group in Boston.

And with OpenMind, "You can also mix and match various intranet technologies to suit your needs," said David Strom, principal at David Strom, Inc., a consultancy in Port Washington, N.Y. "Notes requires a complete marriage and commitment, while with OpenMind, you can just be dating."

Merlin takes Notes. See page 48.

Intranet fever strikes CEOs

CONTINUED FROM PAGE 1

Inc. in New York. Chief information officers better get on the intranet stick, he said. One CIO said his CEO has been sending him news clippings and World Wide Web addresses with notes that say, "Isn't this cool?"

Convincing top brass to take the plunge is a lot easier when the CEO gets Web fever, said Bill Makley, Internet and intranet manager at the U.S. division of German telecommunications giant Siemens Rolm Communications.

"Our CEO, who's a Visual Basic programmer, taught himself [the Web's Hypertext Markup Language] over the Thanksgiving weekend. He realized the power of this. He came back Monday and said, 'By April 1, I want the entire company on the Web.'"

Top answers from an informal poll taken last week at Intranet '96

What is the biggest impediment to bringing an intranet into your company today?	36.1%	Management priorities
In two years, what will be the biggest impediment to bringing an intranet into your company?	30.8%	User ability and motivation
What kind of control do you expect to have over intranet content?	47.8%	Setting standards

Base: 75 IS managers and CIOs

Source: *Computerworld* survey

By April 1, the company's 5,800 desktops in Santa Clara, Calif., and 63 field offices were intranet-enabled.

If your CEO is reluctant, Leilani Allen, an analyst at Tenex Consulting, Inc. in Burlington, Mass., recommends deploying an intranet in a department where it will be used heavily, such as engineering, and then showing the executives its success.

Security concerns

But security is still an issue, even for intranet proponents.

Chrysler Corp., for example, altered and limited the content of at least one of its engineering intranets to prevent leaks of sensitive information.

"The last thing I want is that [data] getting into competitors' hands," said Susan Unger, executive director of IS at Chrysler in Center Line, Mich. "We have firewalls, but [our intranets] are not as secure as I would like."

Many of today's intranets are quite small and cost just a few thousand dollars. But Brian Henderson, vice president and senior technical consultant at Texas Commerce Bank in Houston, warned that cost and complexity will increase as firms move to "killer applications" such as Web links to legacy databases. "You're going to have to begin justifying the cost of the intranet in a year or two," Henderson said.

George Brenner, CIO of MCA, Inc. in Universal City, Calif., agreed costs will go up as more complex data is added to the system. But he said in the long run, a CIO will be able to show that the savings outweigh the costs.

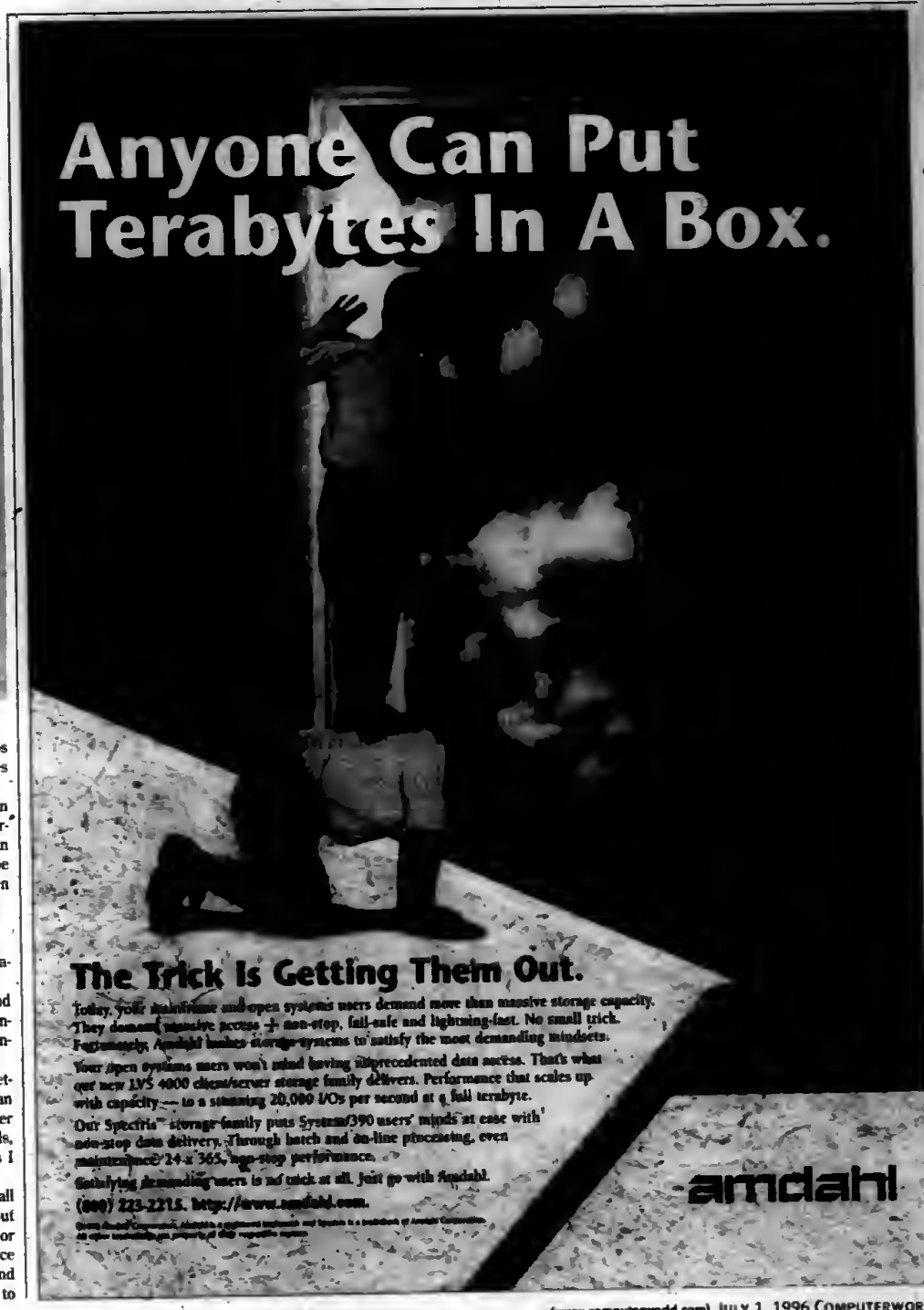
"You have server driven applications with a browser front-end which lowers costs of support," he said. "If there's a bug or other problem, you're fixing it at the server level and not at each desktop."

Hughes Electronics Corp. in Westchester, Calif., has already tallied the costs.

Jim Woods, a vice president at Hughes, said the company spends about $14 million per year on its intranet, or about $2 per megabyte for the 7T bytes of data it ships on the internal network.

Attendees agreed that despite the costs, intranets will be mandatory in the future.

"There's a critical mass building where having an intranet and Web presence inside and outside of your company is a requirement to do business," Makley said. "Even more so than the fax machine was in the '80s."



Sales tools

CONTINUED FROM PAGE 1

But the software goes well beyond keeping lists of contacts, products and prices. Instead, these systems integrate a wide array of data about previous sales calls, support requests, unresolved maintenance issues, pricing and product availability — all in a database accessible to an entire sales staff (see story at right).

Tips for successful sales system implementations

- MAKE SURE THE SALES ORGANIZATION — NOT IS OR CORPORATE MANAGEMENT — CHAMPIONS AND PAYS FOR AUTOMATED SYSTEMS.
- SECURE UNIVERSAL BUY-IN. AN INTEGRATED SALES SYSTEM IS WORTHWHILE ONLY IF EVERY SALESPERSON USES IT.
- TAKE TIME TO ANALYZE SALES AND MARKETING NEEDS; IT IS EXPENSIVE TO FIX MISTAKES LATER.
- MAKE SURE THERE IS A CLEAR DIRECTION; DON'T JUST AUTOMATE FOR THE SAKE OF IT.

"One advantage of integrated systems is team selling," said Gina Wiebe, manager of sales information systems at Cisco Systems, Inc., a network equipment manufacturer in San Jose, Calif.

"If you're trying to sell a deal with someone on the East Coast and you're on the West Coast, one salesperson can enter the opportunity into the system, and the other person can see it and follow through oo it," she explained.

Quick resource

The Charles Schwab Corp., a $200 billion financial services firm in San Francisco, is deploying Siebel System, Inc.'s sales enterprise software to 4,000 users across 200 branch offices nationwide.

Staffers can enter any questions and tidbits of information volunteered by customers and potential customers who call the offices. The system ranks these leads in terms of sales potential and electronically forwards them to the appropriate salesperson.

"If a customer calls in to check on their account and mentions an ad they saw in the paper for a mutual fund, that informatioo is captured and an expert oo mutual funds would get that lead," explained Dan Keller, vice president of systems development. "Instead of the concept of cold calling or one-size-fits-all, we can really home in on what people are looking for with a sort of disciplined follow-up."

But these slicker sales capabilities don't come cheap. Siebel's Sales Enterprise system, which Charles Schwab uses, starts at $1,795 per user.

Still, "companies are starting to see they can get more benefits from true technology-enabled selling, not just from administrative products like contact management," said Wendy Close, an analyst at Gartner Group.

To help users implement the newer, more complex sales systems, some vendors are throwing consulting services into the price of their software. Other vendors, such as Vantive Corp., have teamed with third-party implementation partners, including SHL, Inc. and Electronic Data Systems Corp.

Jon Sweet, information management director at Du Charme, McMillen & Associates, Inc. in Fort Wayne, Ind., said the company chose FrameWork 2.5 from Sales Vision, Inc. in Charlotte, N.C., partly because consultants were provided.

"We set up shop in a conference room with four of us and a couple Sales Vision consultants, and we went to town devising our project and customizing it," Sweet said.

Generation gap

Levels of sales force automation

Generation	User technology	Percent of users
First	Word processing	8%
Second	Contact management	21%
Third	Account territory manager	41%
Fourth	Telemarketing and opportunity management system	20%
Fifth	Team selling, integrated telemarketing and field sales	3%
Sixth	Complete sales and mobile user	1%

Source: Gartner Group, Inc., Stamford, Conn.

Integration gains favor

Most companies have already put stand-alone sales automation tools in place to manage contacts and generate reports. But integrated systems that give sales staffs a wide range of customer support, pricing and product data have only recently hit the market.

In the past few months, Vantive Corp. and Aurum Software, Inc., both in Santa Clara, Calif., and Scopus Technology Corp. in Emeryville, Calif., have announced integrated systems that will let users remotely access, update and synchronize information databases. Scopus added an unusual twist by mandating that new customers sign up for its Lift-off program, which bundles in the cost of using Scopus' consulting partners.

Mitch Bishop, director of product marketing at Scopus, said a high percentage of implementations fail because of poor planning. By bundling in consultant services, vendors hope to ensure a higher success rate for users, he said.

—Julia King

Single log-on for OS/2

IBM software add-on targets enterprise

By Laura DiDio

IBM gave users secure access to enterprisewide resources via a single log-on last week with its release of Directory and Security Server (DSS) add-on software.

DSS, due out this week, extends the reach of OS/2 Warp Server 4.0 beyond the workgroup and into the enterprise, said Art Olbert, IBM's vice president of server products.

Encryption standard

DSS uses the industry standard-based Kerberos private-key security. It consists of three security facilities: authentication, encryption and authorization. Together, they eliminate the problem of transmitting unencrypted passwords that hackers could capture, said Josh Airall, systems analyst at Cincinnati Bell in Cincinnati.

The software was designed to replace and enhance the existing functionality of OS/2's Domain Controller Database for large enterprise shops. It gives network administrators the ability to centrally manage local and remote network users and devices.

DSS uses the Distributed Computing Environment (DCE) directory to support consolidatioo of local domain directory databases of users and network objects into a single cell-directory structure. This, in turn, can store data based on hundreds of servers.

Domain directories store information by specific user groups. Groups can include multiple servers, but users must log on to each domain. Because there is no central domain server, administrators must know the name of the server they want to access. By contrast, the cell structure in DSS melds the local domain directories into a single database container that requires only a single log-on.

"It's an excellent concept," Airall said. He said IBM's LAN Server and Warp Server have always given users access to additional domain servers.

"Deploying DSS will let me drag and drop resources across geographical domains and create new groups of users or devices by simply pointing and clicking from my network management console," Airall said.

DEC offers measure of security

Software may make 'net a safer place to transact business

By Jaikumar Vijayan

Security

In a move to make the World Wide Web a safer place to do business, Digital Equipment Corp. last week announced software for secure online transaction processing over the Internet.

The Transaction Processing Internet Server was designed for high-end business-to-business applications such as financial services, insurance claims processing, order processing, inventory control and distribution.

Prices start at $14,205 for a Digital Unix version and $6,405 for a Windows NT version.

Shipment is scheduled for August.

No fooling around

"This is not about consumers ordering skis over the Internet; neither is it about credit-card encryption," said Wes Melling, vice president of OpenVMS products at Digital in Maynard, Mass. "This is about serious high-volume, business-to-business transaction processing between established partners" over the Internet, he said.

- Transaction processing monitor
- Desktop client software
- AltaVista Workgroup Tunnel
- AltaVista Personal Tunnel
- Software installation and application start-up guide

"A lot of our customers are interested in doing business with us over the Internet. A product like this gives us the comfort to go ahead," said Keith Steva, executive vice president of DigiKey, Inc., an electronics distribution company in Thief River Falls, Minn.

DigiKey plans to use the Internet so its customers can link into its databases for inventory querying and automatic inventory replenishment, for example.

"You can't afford to be penny-wise and pound-foolish with a lot of these things. You need to have technologies that are secure and work together" on the Web, said Jim Johnson, president of The Standish Group International, Inc. in Dennis, Mass.

TP Internet Server integrates Digital's three-tier ACMSxp TP monitor with its AltaVista Tunnel encryption technology. ACMSxp gives users interoperability of applications among multiple platforms.

First anniversary for virtual bank. See page 61.

51 Issues for ~~$48~~ $39.95

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of $39.95* per year - a savings of $8.00 off the basic subscription price.

First Name _____ MI _____ Last Name _____

Title _____ Company _____

Address _____ City _____ State _____ Zip _____

Address Shown: ❑ Home ❑ Business ❑ New ❑ Renew Basic Rate $48 per year

* U.S. Only. Canada $95. Mexico, Central/South America $150. Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

Please complete the questions below to qualify for this special rate.

1 **BUSINESS/INDUSTRY** (Circle one)

10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agric.
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Dist./ Retailer
99. Other _____ (Please Specify)

2 **TITLE/FUNCTION** (Circle one)

IS/MIS/DP MANAGEMENT

18. Chief Information Officer/Vice President/ Asst. VP IS/MIS/DP Management
21. Dir./Mgr. MIS Services, Information Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgt. /PC Mgt. Tech Planning, Admin Sys.
23. Dir./Mgr. Sys. Development, Sys. Architecture
31. Programming Management, Software Developers
41. Engineering, Scientific, R&D, Tech. Mgt.
60. Sys. Integrators/VARs/Consulting Mgt.

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Asst. VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Mktg. Management
70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3 Do you use, evaluate, specify, recommend, purchase (Circle all that apply)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Development Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

COMPUTERWORLD

B276-8

Recycled Paper

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 558 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144

Whether you realize it or not, software comes with a set of beliefs built in. Before you choose software, make sure it shares yours.

Do you believe in embracing change, rather than avoiding it? Do you believe in putting power in the hands of people, not systems? Do you believe decisions should be made, not just by headquarters, but by those at the front lines? If you do, then you should know about software that was created with these beliefs in mind. PeopleSoft client/server software. It adapts to change quickly and economically. It makes it easier for those at the front lines to get the information they need to make better decisions. And it's flexible enough to adjust to the way you do business, not the other way around.

No wonder so many major corporations have chosen PeopleSoft. They've discovered we have the technology, the people, and the commitment it takes to make their beliefs a reality. To find out more, give us a call at 800-947-7753 or visit our home page at http://www.peoplesoft.com.

PEOPLE Soft

Enterprise client/server software solutions for finance, materials management, distribution, manufacturing, and human resources.

A few of the companies who believe in PeopleSoft:

BARNETT BANKS · CARON U.S.A., INC. · ELI LILLY AND COMPANY · EQUITABLE LIFE · HERSHEY FOODS CORPORATION · SONY MUSIC · WHIRLPOOL CORPORATION

© 1996 PeopleSoft, Inc. PeopleSoft is a registered trademark and the PeopleSoft logo is a trademark of PeopleSoft, Inc.

Baan's Amal Johnson

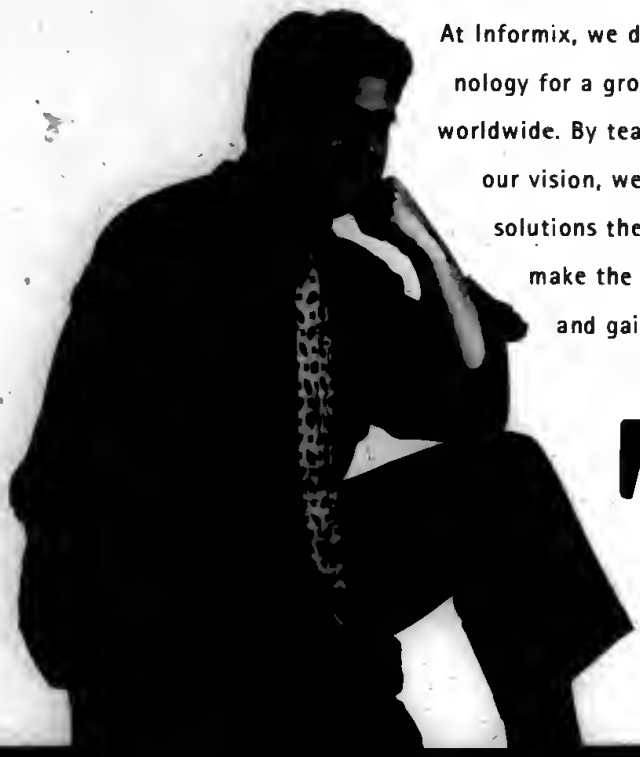
"When Baan develops resource planning software, we try to anticipate the problems our customers may face tomorrow.

Partnering with Informix gives us the ability to create software that is extensible and configurable to any stage in a customer's business life cycle. Because we believe the faster you adapt to change, the faster you'll become an industry leader."

Amal Johnson
President, Baan Americas

"Informix isn't just about database software. We have the people, the technology, and the partners, like Baan, to make our customers successful today and in the future, no matter how unpredictable their business may be."

Tony DeCicco
Vice President of Professional Services, Informix



At Informix, we deliver innovative database technology for a growing number of industry leaders worldwide. By teaming with companies who share our vision, we provide our customers with the solutions they need to stay ahead of change, make the most of emerging opportunities, and gain a competitive edge in business.

INFORMIX®

www.informix.com

©1996 Informix Software Inc All rights reserved The following are worldwide trademarks of Informix Corporation Informix Software, Inc or their subsidiaries, registered in the United States as indicated by ® and in numerous other countries worldwide INFORMIX® All other names or marks may be trademarks of their respective owners

on Informix.

Cray moves to port-able switching

By Bob Wallace

Cray Communications Corp. is upgrading its Ethernet switches to include a technology that automatically selects the best data transmission method on a per-port basis.

Some current switches can move the entire network from one mode to another for optimal performance, but the Cray technology differs in that modes can be changed per port.

For example, if users on one port experience heavy errors in data transmission, Cray's Automatic Adaptive Switching technology can move them to a more reliable but slower mode without penalizing users on other ports who aren't experiencing data errors.

Without this, it would be akin to a company requiring all its employees to work with a cast when only one had a broken arm.

"This is a solid differentiator for Cray's Ethernet switches — one I haven't seen elsewhere in the industry," said Skip MacAskill, a senior research analyst at Gartner Group, Inc. in Stamford, Conn.

With Cray's MatchBox Ethernet switch, if there is little network traffic and few errors, the switch chooses the fastest scheme: cut-through switching. If errors increase, the device automatically drops to the next-lowest level: fragment-free switching.

And if that still doesn't do the trick, MatchBox automatically drops down to store-and-forward mode. This offers the slowest data transmission but ensures the fewest errors because the data is stored first and then forwarded.

Users said they were enthusiastic about the MatchBox switches because they are upgrading their backbone networks to higher speeds and want to switch at the highest speeds, except when errors accrue in data transmissions.

"We've done that with the goal of increasing throughput, which means going with cut-through switching," said Ian Primrose, network controller at Amerada Hess Ltd., a London fuel company that is testing the technology. "Running in store-and-forward mode would increase delay, which we want to pretty much avoid."

Another key feature is that users don't need to set the switch settings because MatchBox comes programmed with default thresholds. Users can set their own thresholds, although MacAskill predicts that nine of every 10 network managers will go with the defaults.

The new switching technology will ship standard with every MatchBox switch and is available as a free software upgrade beginning this month.

Cray Communications is a division of Cray Electronic Holdings PLC in England and isn't affiliated with Cray Research, Inc. or Cray Computer Corp.

Types of Ethernet switching

Cut-through switching: Packets are transmitted as soon as the destination address is read, though sometimes with errors.

Fragment-free switching: This is slower than cut-through switching and only forwards entire uncorrupted packets.

Store-and-forward switching: The slowest but most reliable option. All packets are stored in the switch before being transmitted.

More to come

Analysts predict that larger Ethernet switch vendors will develop similar technology and that others will move to resell the Cray switch with Automatic Adaptive Switching.

COMPUTERWORLD's Code of Ethics

1. Computerworld's first priority is the interest of its readers.
2. Editorial decisions are made free of advertisers' influence.
3. We insist on fair, unbiased presentation in all news and articles.
4. No advertising that simulates editorial content will be published.
5. Plagiarism is grounds for dismissal.
6. Computerworld makes prompt, complete corrections of errors.
7. Journalists do not own or trade in computer industry stocks.
8. No secondary employment in the IS industry is permitted.
9. Our commitment to fairness is our defense against slander.
10. All editorial opinions will be clearly labeled as such.

WORDS WE LIVE BY.

When you pick up a copy of *Computerworld*, you know you're getting the most objective, unbiased news and information in IS. Our code of ethics guarantees it.

Why do we make such a big deal out of editorial integrity?

Because the words you read in *Computerworld* often have a dramatic impact on your business, your career, and your future.

You use this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get the edge on your competition.

In short, *Computerworld* is filled with the words IS professionals like you live by.

WORDS YOU WORK BY.

Week in and week out, our editors and reporters call it the way they see it,– on issues ranging from network management to reengineering. They dig deeply to bring you the most accurate, comprehensive news in IS.

It's no wonder over 145,000 IS professionals pay to subscribe to *Computerworld*. Shouldn't you? Order today and you'll receive 51 information-packed issues. Plus, you'll get our special bonus publication, *The Premier 100*, an annual profile of the leading companies using IS technology.

Call us toll-free at **1-800-343-6474**, or visit us on the World Wide Web at http://www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue.

You'll get the kind of straightforward, impartial reporting you can work by. You have our word on it.

COMPUTERWORLD

Everything you need to know.

Starting In October, Data Warehousing Enters a Whole New Dimension.

SAS Institute Introduces the First Integrated Data Warehouse and OLAP Solution.

Soon we'll launch the first multidimensional database that's tied directly to a complete end-to-end data warehousing solution...making data query faster and easier than ever. *Plus* reach-through options you can use to visualize your detail data. *Plus* new reporting objects you can apply directly to your database.

Our new multidimensional database is at the core of SAS Institute's OLAP solution—which includes the SAS® Data Warehouse for managing, organizing, and exploiting data...a full client/server environment... and a web enabler.

Yours FREE...A Guide to OLAP Success

Before you settle for an ordinary OLAP solution, see what's on the horizon in our free guide, *A Formula for OLAP Success*. Just give us a call at 919.677.8200 or send us E-mail at cw@sas.com

SAS Institute

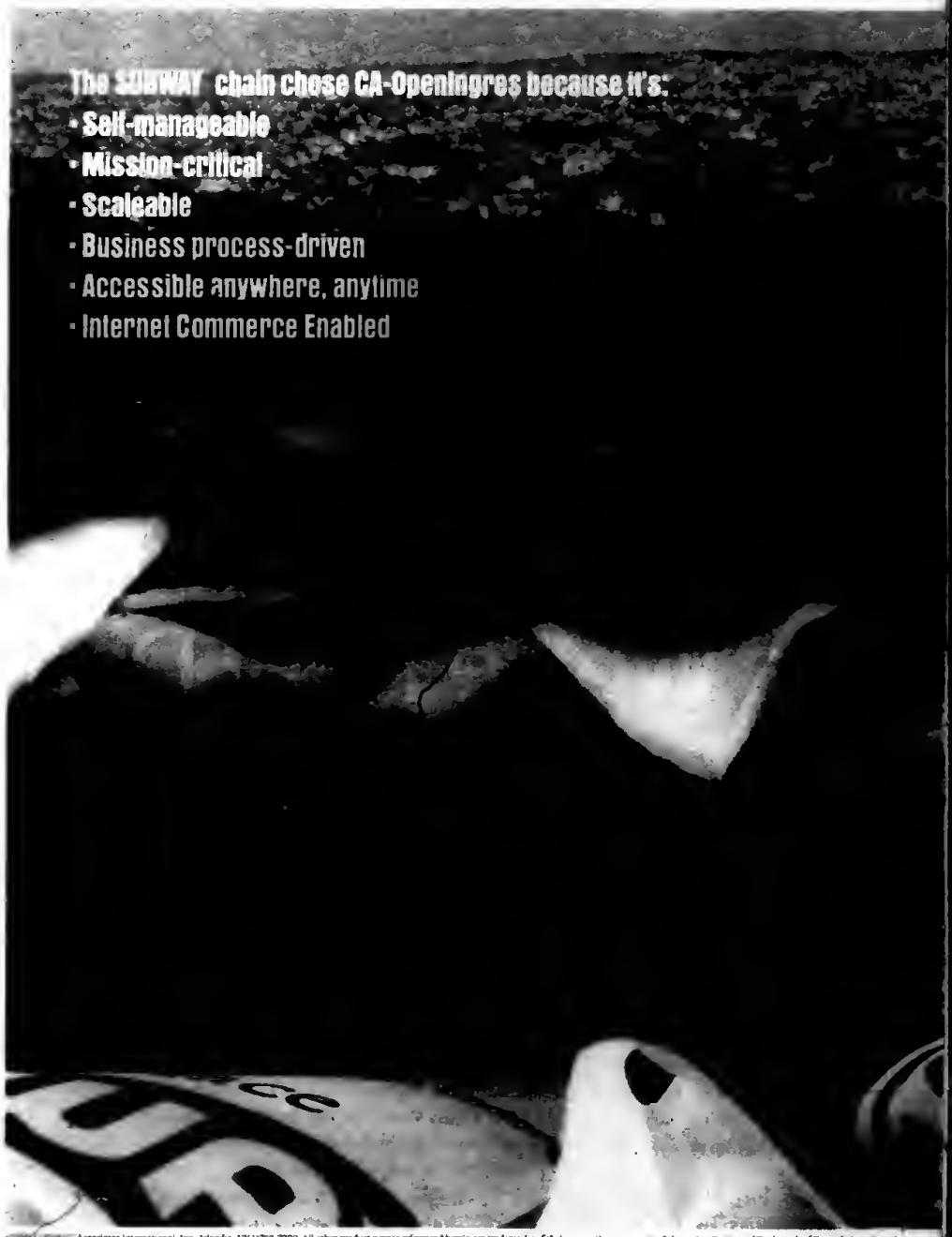
The Business of Better Decision Making

Phone 919.677.8200
Fax 919.677.4444
In Canada 1.800.363.8397

Visit us on the World Wide Web at http://www.sas.com/olap

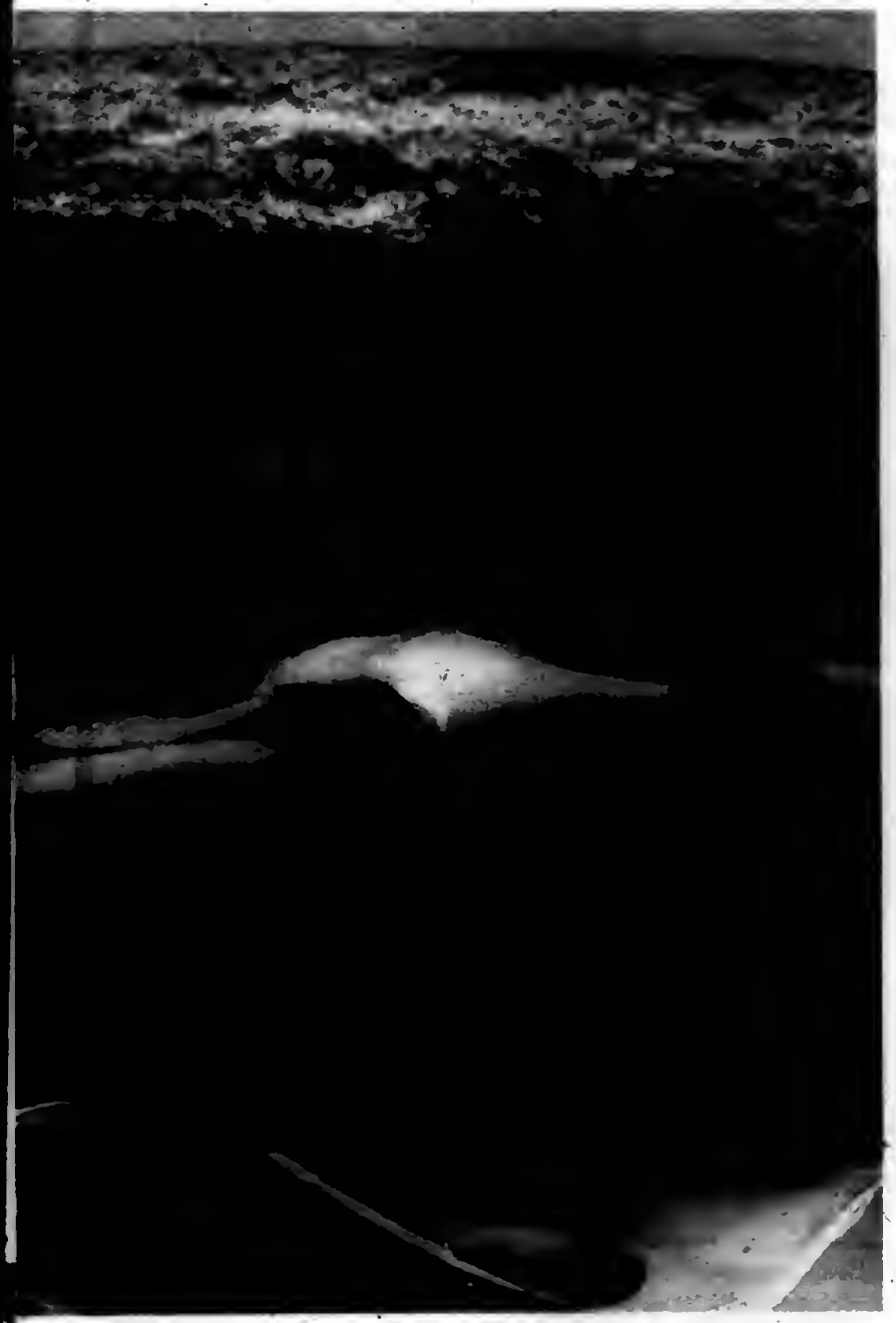
SAS is a registered trademark of SAS Institute Inc. Copyright © 1996 by SAS Institute Inc.

America's Fastest-Growing Franchises Run On CA-OpenIngres.



Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies. Subway is a Registered Trademark of Doctor's Associates Inc.

The SUBWAY® Chain Can Tell You Why.



With over 10,000 locations in 21 countries, the SUBWAY® chain was starved for the best mission-critical DBMS it could find.

So they ordered CA-OpenIngres™ – with the works!

"Some people are saying that database engines are commodities," says Patricia Bollettieri, Director of MIS for Franchise World Headquarters, Inc. "But our research showed that CA-OpenIngres and CA-OpenROAD™ both have many unique capabilities and features that the competition doesn't have. It was the obvious choice."

SUBWAY®

With a robust database engine, superior integration of all administration and development tools, and the support of the world's leading software company, CA-OpenIngres has made Franchise World Headquarters, Inc. one happy customer.

"We're very pleased," says Ms. Bollettieri. "CA-OpenIngres really hit the spot."

For More Information On CA-OpenIngres, Call 1-800-225-5224.

Or visit us at http://www.cai.com

COMPUTER® ASSOCIATES
Software superior by design.

Open Your Mind To OpenIngres

INTRODUCING
CONFIGURABLE
NETWORK
COMPUTING.

ALL THE FLAVOR
OF CLIENT/SERVER
WITHOUT THE
BITTER AFTERTASTE

J.D. Edwards is proud to introduce a remarkable new software architecture that delivers the benefits you've always hoped for in client/server, while masking the complexity. Called Configurable Network Computing,™ or CNC, it's available only in J.D. Edwards OneWorld™ software. CNC can dynamically configure and reconfigure everything from workflows to business objects to data warehouses to the graphical user interface. And you can do all this without writing a single line of code. Your CNC solution can include UNIX, Windows NT, OS/400 and MVS systems, as well as the leading SQL databases. And it's only from J.D. Edwards, a leader in enterprise solutions, with almost 4,000 customers in over 90 countries. For a free white paper, call 1-800-727-5333. Or visit www.jdedwards.com

JDEdwards

©1996 J.D. Edwards is a registered trademark of J.D. Edwards & Company. OneWorld and Configurable Network Computing are trademarks of J.D. Edwards World Source Company

Internetworking deals trigger some user alarms

By Bob Wallace

Deep discounts, aggressive package promotions and low-priced starter kits are becoming common in the fiercely competitive internetworking industry — a phenomenon that can save savvy IS managers thousands of dollars.

But among those who offer a note of caution is Peter Pollack, vice president of new technologies and architecture at Showtime Networks, Inc. in New York. He said information systems managers shouldn't forget due diligence before they cash in on what could be a great financial deal.

"You have to assess the long-term viability of the technology and of the vendor," Pollack warned. "With all the consolidation in the networking industry, you want to be sure the company that sells you the product doesn't vanish. And you don't want to buy in to technologies that aren't mature until they develop and you feel comfortable with them."

Blue-light specials

Vendor	Product package	Price
Intel	Stackable Fast Ethernet hub, adapter cards	$3,685 (before) $2,995 (after)
3Com	Hub trade-in program	$1,000 credit toward switch, $100 credit toward module
Newbridge Networks	VIVID Starter Kit*	$96,000 (before) $49,995 (after)

Most users know they can buy networking gear at an attractive street price, typically below the list price quoted by vendors. But there are more and newer ways to save.

"The opportunities will soon be endless in the internetworking industry and will very likely spread as others pick up on these effective marketing practices," said Daniel Briere, president of TeleChoice, Inc., a consultancy in Verona, N.J. "IS managers need to keep their eyes and ears wide open."

Buyer beware

Users see pros and cons to the vendor deals. "You can potentially save your company a great deal of money on internetworking equipment and [wide-area network] services, but you can't let a special deal rush your plans or keep you from doing a thorough evaluation of the product and technology first," said Mark Maxwell, vice president of global systems engineering at Fuji Capital Markets Corp. in New York. "If it's a mature technology from a proven vendor ... there's less risk involved."

Other users agreed.

"They're great deals if you need something, but you can't go out of your way to grab something just because there's a deal on it," said a network manager at a grocery chain in the Northwest. "It can be better to wait a while, as tomorrow's deal will likely be much better than today's."

Still, vendors are rushing to users and channels with sweet deals (see chart). For example, Madge Networks, Inc.'s ATM-in-a-Box provides all the pieces needed to build an Asynchronous Transfer Mode (ATM) workgroup network.

The package includes a 25M bit/sec. ATM workgroup switch, six adapters, a high-speed uplink and software. And ATM-in-a-Box costs less than $6,500. Before, those items would cost $12,265 if they were bought separately from Madge.

Attractive pricing also extends to more mainstream technologies such as Fast Ethernet switching.

Announcing ***SPF/Professional v. 5.0***, the complete PC-based *Integrated Development Environment* for CICS, IMS, and DB2 applications. This all new product operating on Windows-95 and Windows-NT provides the ideal environment for *refacing, rehosting, maintaining* or *enhancing* legacy COBOL applications. ***SPF/Professional*** used with Micro Focus or CA-Realia-II provides optimum productivity, time to market, and overall competitiveness.

Enterprise Developer Edition — Extensive custom dialogs provide direct operational control of MVS,* DB2, XDB, Micro Focus and CA-Realia-II components. Also includes industrial strength file manager, editor and browser. All components operate in 32-bit, fully graphical mode.

Dialog Developer Edition — A complete SPF dialog development environment which includes source for over 400 panels, PDS API for accessing PC Based Partitioned Datasets, MVS* API for accessing the mainframe from user developed custom dialogs, configurable command tables for re-direction, aliasing and customization of primary commands, popup menu support, direct invocation of external HLL programs with callback support via ISPLINK, full Dialog Management Services via ISPEXEC, RAD macro and Proc development via REXX. (Includes *Enterprise Developer Edition*).

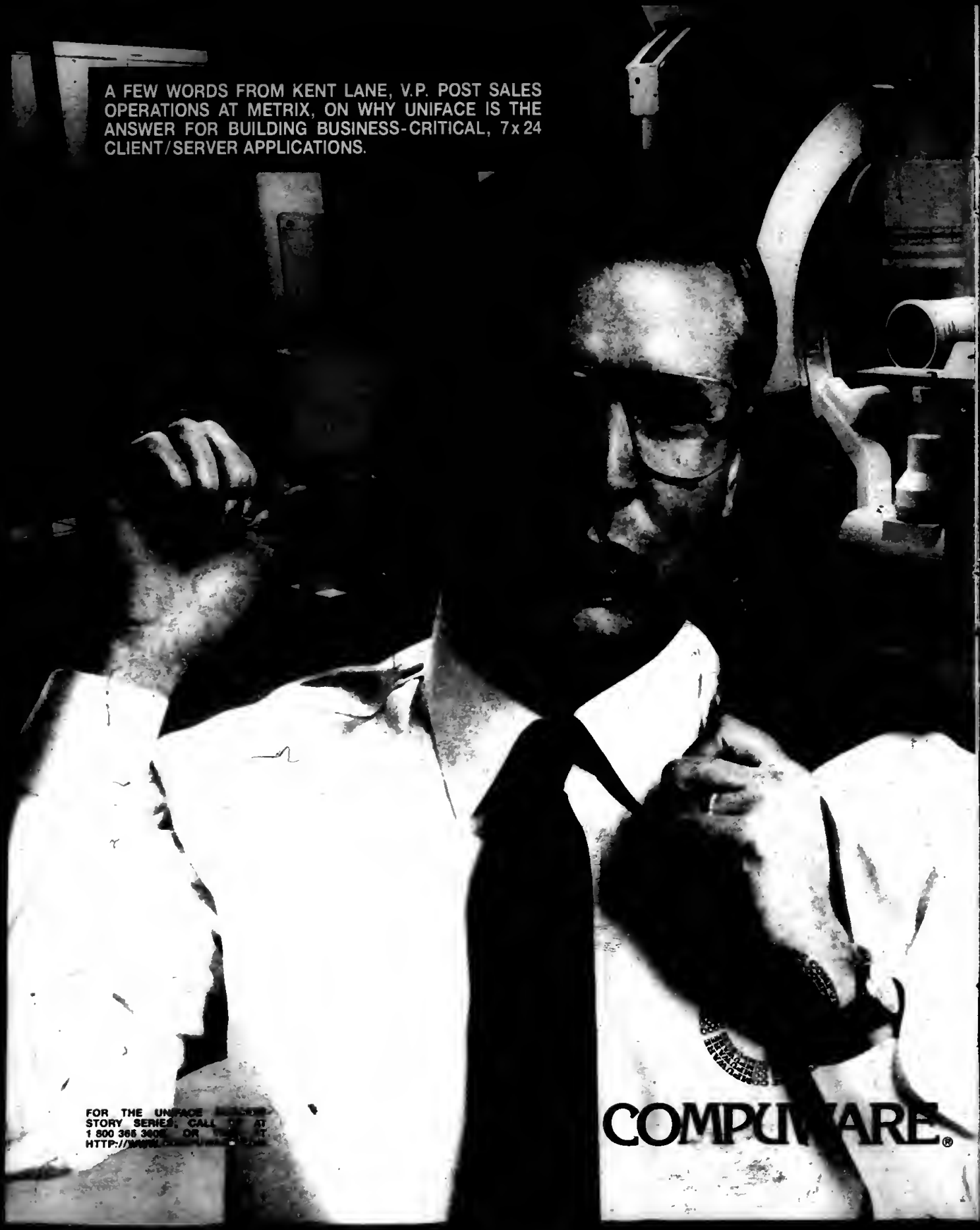
* MVS connectivity requires separately priced host-server software.

To Order SPF/Professional, Call 800-336-3320

CTC Command Technology Corporation
1040 Marina Village Pkwy, Alameda, CA 94501
Phone: 510-521-5900 • BBS: 510-769-6826

New SPF/Professional!

SPF/Professional is a trademark of Command Technology Corporation. CICS, IMS, DB2 and MVS are trademarks of IBM Corporation. Windows is a trademark of Microsoft Corporation. Micro Focus is a trademark of Micro Focus, Ltd. CA-Realia-II is a trademark of Computer Associates International, Inc. XDB is a registered trademark of XDB Systems, Inc. All other products and marks are the property of their respective owners.


A FEW WORDS FROM KENT LANE, V.P. POST SALES OPERATIONS AT METRIX, ON WHY UNIFACE IS THE ANSWER FOR BUILDING BUSINESS-CRITICAL, 7x24 CLIENT/SERVER APPLICATIONS.
FOR THE UNIFACE
STORY SERIES, CALL
1 800 365
OR
HTTP://
COMPUWARE®

manage
operations
to choose a job
UNIFACE
UNIFACE
UNIFACE
UNIFACE WHAT THE BIG GUYS USE

Users torn by point, counterpoint

Systems management vendors offer different tacks

By Bob Francis and Thomas Hoffman

When it comes to ordering systems management software, the menu consists of soup-to-nuts enterprisewide platforms or a la carte point products.

But users are finding that neither option completely fits the bill.

Transportation Technology, Inc. in Wayne, Mich., three years ago purchased Computer Associates International, Inc.'s CA-Unicenter systems management suite to meet its tape management, security and workload management needs.

"But the scheduler is about the only thing we've been happy with," said Barbara Gragg, an operations supervisor at the automobile distributor.

Transportation Technology has since shifted to a series of individual products, including Platinum Technology, Inc.'s Univision and DBVision software.

Transportation Technology is typical of many companies that buy full-scale management suites and find they use only selected parts and don't take advantage of the overall functionality of the framework, according to Hurwitz Group, Inc. in Newton, Mass.

Other users complain that true enterprisewide systems management is hard to come by. "I think all of [the systems and network management vendors] are touting [themselves] to be all-in-one, but when you pull back the covers, there are gaps in all of them," said Chris Pickett, a senior manager at MCI Communication Corp.'s enterprise solutions services group in Colorado Springs.

Anthony Flora, *senior vice president of NationsBane Services, Inc. can't decide between discrete point products and an entire systems management framework*

And like Transportation Technology, many users opt for point products, according to Hurwitz Group. But these present drawbacks as well.

Integrating individual products can be difficult, said Michael Mueller, senior systems analyst at Northwestern Mutual Life. He has worked with Platinum products since joining the Milwaukee insurer in April.

Vendors respond

In response, CA and other vendors are developing methods of melding third-party products effectively with their frameworks.

For instance, CA recently announced that Cheyenne Software, Inc. in Roslyn Heights, N.Y., is preparing Cheyenne ARCserve for TNG, a package slated to ship by year's end that was designed to extend CA's forthcoming CA-Unicenter: The Next Generation desktop backup capabilities.

The command center *at Ontario Hydroelectric uses Boole & Babbage's Ensign*

MCI is trying the mix-and-match approach. After realizing that one product couldn't do it all, MCI last week announced a multimillion-dollar contract with Candle Corp. in which the telecommunications giant will apply Candle Command Center software to beef up performance and availability management that its CA-Unicenter, IBM NetView and Hewlett-Packard Co. OpenView packages lack.

But that approach isn't a surefire bet either. Ontario Hydroelectric Corp. in Toronto decided to use point solutions linked by Boole & Babbage, Inc.'s Ensign, which allows systems managers to monitor various management functions.

According to Andy Shih, support network manager for the utility, it takes too long to integrate point products into frameworks. "If you try to integrate them, it takes about a year, so by then you need to be looking at new products. It's simply not effective," he said.

Though each of the various options can give IS managers indigestion in one form or another, managers continue to hit the buffet table because they hunger for systems management. Ameritech Corp. and Chrysler Corp. announced recently that they are signing major deals for Tivoli Systems, Inc.'s enterprisewide systems management product, TME.

And the distributed systems management market is expected to reach $2 billion this year, up from $1.6 billion last year, Hurwitz Group said.

Browser to unify IBM server suite

By Craig Stedman

IBM will try to fix a big shortcoming in its new line of integrated software servers by putting a common World Wide Web browser-based administration interface on all of the products early next year.

Introduced in March, the initial IBM Software Servers offering forces systems administrators to learn a different user interface for each of the seven products that make up the line. It is a multiplatform answer to Microsoft Corp.'s BackOffice software suite for Windows NT.

Consistency is key

Even in the next release, due early next year, the servers will continue to have distinct administration features and capabilities. But early users and analysts said IBM's promise to implement a consistent look and feel across the line should make it much more administrator-friendly.

Tom Kucharvy, an analyst at Summit Strategies, Inc. in Boston, said a consistent interface for tasks such as adding users and changing system access privileges would eliminate a drawback and get IBM more in line with what Microsoft offers in BackOffice.

The IBM Software Servers family, also called Eagle, offers Notes, transaction processing, Internet access, database and other servers. The integrated line is the centerpiece of IBM's latest attempt to shed its lightweight status in client/server software.

First Data Resources, Inc., a third-party processor of credit-card transactions in Omaha, is testing the OS/2 versions of IBM's communications and database servers. The first cut at Eagle made good steps toward built-in interoperability and common installation procedures, said Dwaine Pekarek, senior software development analyst at First Data. "But the administration side had not been merged at all," he said.

Chubb & Son Insurance Co. in Warren, N.J., is also doing early development work with the Eagle products. "If I had to go work on the database, which isn't my particular area of expertise, I might be able to be more effective at it than I am now if the interface was more consistent," said Scott Srager, a technical analyst at Chubb.

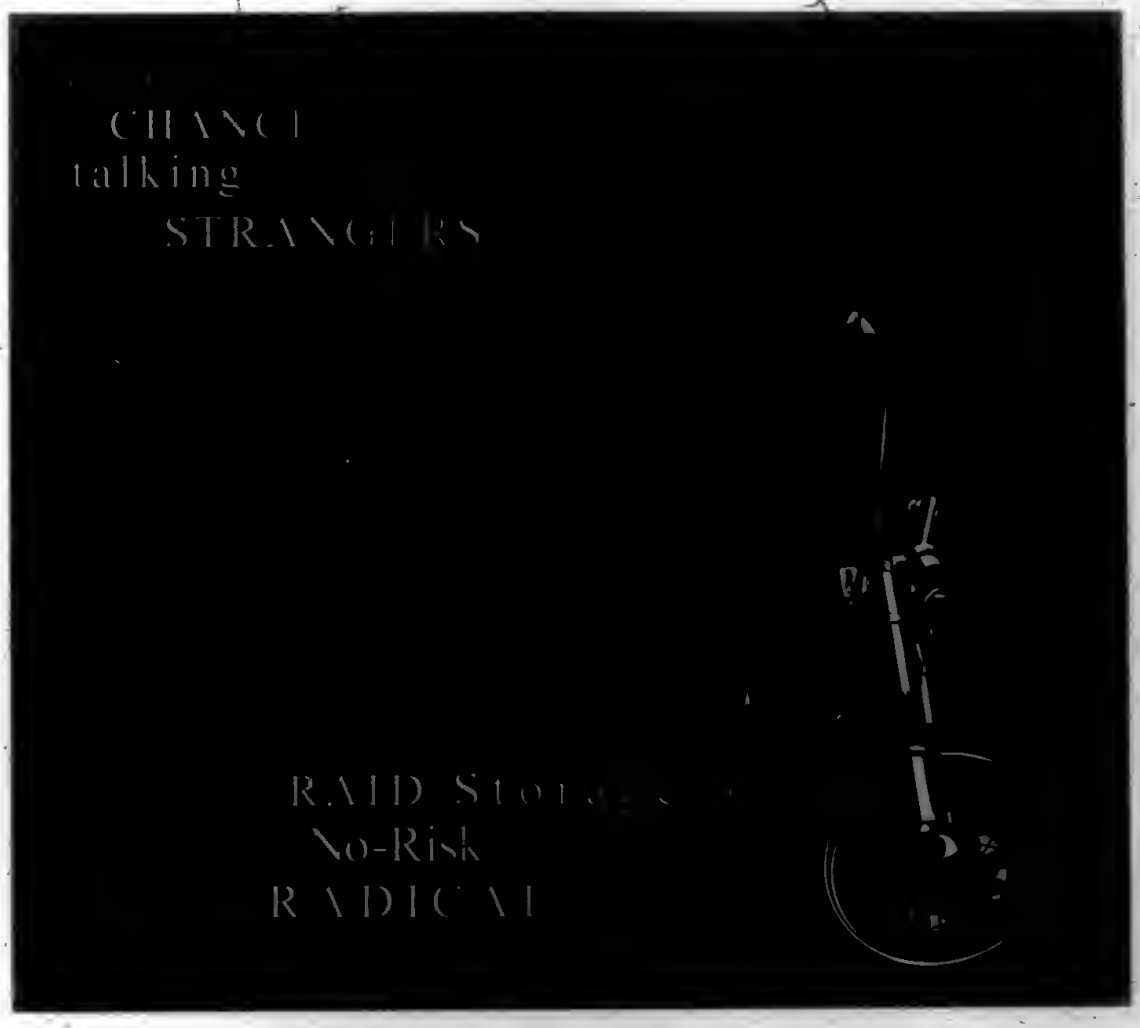
IBM's plan to house the common interface in a Web browser is even better, Srager added. Chubb administers systems at 62 offices in the U.S. and Canada from its headquarters, "and if we had the Internet to access [the software servers], it would be a lot easier to set things up," Srager said.

On the suite spot

A comparison of IBM and Microsoft software server suites

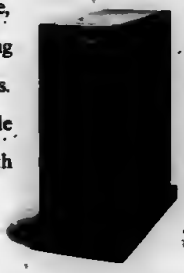
	IBM Software Servers	Microsoft BackOffice
Operating systems	OS/2, AIX, Windows NT	Windows NT
Supported software	• Notes • DB2 database • Internet Connection Server • Communications Server • Systems management • Distributed Computing Environment directory and security • CICS, Encina transaction monitors	• Exchange E-mail • SQL Server database • Internet Information Server • SNA Server • Systems management
Packaging	Sold separately but integrated by IBM	Sold in bundles with Windows NT or separately

H I T A C H I D A T A S Y S T E M S



HDS Midrange 5700 Disk and 5400 Tape Series

Stick your neck out on some topics. But on RAID storage, leave no room for debate on your obsession with avoiding risk. Choose the 5700 Series from Hitachi Data Systems. It's the RAID storage system that delivers hot pluggable controllers, fans, disks and power supplies. All with the granularity of four models based on the same architecture. So it can grow as you grow—from



modules as small as 2 GB to as large as a terabyte. And you can move from platform to platform, without ever bringing up compatibility issues. This worry-free solution also delivers selectable RAID levels, optimized microcode and an incredibly efficient cache design for outstanding performance. See for yourself. Call now and check out an evaluation unit. Then really speak your mind on avoiding risk in RAID storage.

***FREE* *NO RISK EVALUATION UNIT OFFER**

Call to qualify and schedule: 1-800-910-2820, ext. 249 • www.hdshq.com/raid

HDS
Hitachi Data Systems

S U P P L Y I N G T H E D E M A N D I N G

*Evaluation offer valid for 30 days from issue date of this publication and does not include freight costs. Hitachi Data Systems, 750 Central Expressway, Santa Clara, CA 95050-0996. Outside the USA, call +314-940-9485

Why you'll be happy that people are surfing the net on company time.

It's not the Internet. It's your new Intranet, where your users can share information better than ever before. All over the world, businesses like yours are starting to build intranets to improve information flow within their organizations, with customers and with partners. Intranets combine the Internet's easy navigation with the power and productivity of personal computing. So users not only have the ability to find relevant company information more quickly and easily, they can also employ their desktop applications to create, analyze and collaborate in new ways.

With the Microsoft® Office for Windows® 95 family of applications, you can get the most out of your intranet. Because users can share information on your intranet using the Microsoft Office applications they're using today. For instance, documents created in any Office application can automatically be saved as HTML* for others to view in any web browser. Or users can post the same documents in their native file formats to facilitate more flexible, in-depth analysis and collaboration. Add the new Microsoft FrontPage™ web authoring and management tool, and users can easily create and update their own interactive, content-rich sites by simply clicking, dragging, and dropping.

So of course you'll be delighted to see users browsing and sharing information within your intranet. It's just a sure sign that you've streamlined communications to help people make smarter decisions and work better together. To learn more about how Microsoft can help make your intranet as easy to surf as the Internet, visit **www.microsoft.com/intranet/**

Microsoft

WHERE DO YOU WANT TO GO TODAY?™

Windows are registered trademarks and FrontPage and Where do you want to go today? are trademarks of Microsoft Corporation.

Computer Industry

Cyrix, AMD earnings to take big hit

By Bob Francis

Two David-like chip manufacturers last week admitted the second quarter belonged to chip Goliath Intel Corp.

Officials at Cyrix Corp. in Richardson, Texas, and Advanced Micro Devices, Inc. in Sunnyvale, Calif., said their second quarters will be washouts.

Cyrix officials said the company expects a loss of more than $15 million. AMD representatives said the firm is forecasting a small loss, not the small gain analysts had expected.

Cyrix cited aggressive pricing in the microprocessor market and delays in shipping its Pentium-class 6x86 processor. AMD pointed the finger at lower sales of flash memory products and problems with shipping Pentium-class processors that compete with Intel products.

Cyrix and AMD were left behind as the market shifted from 486-class processors to Intel's Pentium and Pentium Pro chips. AMD last year purchased NexGen, Inc., a company that had developed Pentium-class processors. But AMD only recently started shipping its version of the chips.

Cyrix also ran into trouble marketing its Pentium products. The delays cost each supplier some key customer support. Cyrix still sells chips to AST Research, Inc. in Irvine, Calif. But the PC company, which has its own troubles, is putting more emphasis on its Intel-based lines. And AMD chips aren't sold with Compaq Computer Corp. systems, one of the company's key vendors.

1996 Q1 financials

Cyrix	[redacted]	
Advanced Micro Devices	Revenue	$544.2M
	Profit	$25.3M
Intel	[redacted]	

Wrong defense

Analysts said the non-Intel microprocessor vendors simply can't use price as a competitive weapon anymore because of Intel's manufacturing improvements.

"AMD and Cyrix used to be able to compete on price, but Intel has been more than willing to cut the price whenever necessary," said James Poyner, an analyst at Oppenheimer & Co. in New York.

Facts about Shiva's acquisition of AirSoft

- Shiva acquired AirSoft in a $62 million stock deal.
- AirSoft's 25 employees will remain in Cupertino, Calif., where the company was founded in 1993.
- Shiva's market capitalization is currently $2.1B to $2.3B.
- Jagdeep Singh, AirSoft's president, will become vice president of technology strategy at Shiva.

Power(burst) grab

Shiva acquires software, Silicon Valley presence

By Mindy Blodgett

Shiva Corp.'s recent $62 million acquisition of AirSoft, Inc. was a pricey but probably wise buy, industry analysts said.

With the acquisition, Shiva, a Bedford, Mass., maker of remote access products, acquired the rights to Powerburst, software that makes dial-up calls shorter and less expensive.

Shiva officials said they plan to integrate Powerburst into the LanRover family of products — a move they said will make remote access easier and cheaper for users.

Powerburst helps users improve response time by up to 400% without network updates, according to AirSoft.

The Cupertino, Calif., company also has been working on client/server technology aimed at supporting caching for Internet protocols, Shiva officials said.

"Powerburst is a very unique product," said John Girard, an analyst at Gartner Group, Inc. in Stamford, Conn. "There is some question whether Shiva paid too much, but it gives them a competitive advantage."

Girard said Shiva may be planning to use AirSoft's developments, especially in Internet caching, to persuade Internet service providers and telecommunications providers to use LanRover products.

Dan McCall, director of product marketing at Shiva, said an advantage of the acquisition is that it gives Shiva a stronger presence in Silicon Valley.

"It definitely gives us a beachhead on the West Coast," he said.

Query vendor seeks answers

Seagate buys business intelligence company

By Sharon Gaudin

Seagate Technology, Inc. is pumping up its competitive muscle in the online analytical processing (OLAP) arena with the acquisition of a high-end business intelligence company.

Seagate two weeks ago bought U.K.-based Holistic Systems Ltd. in an $84 million deal. That business will join Seagate's Information Management Group, which markets the Crystal line of query and reporting tools.

Holistic, which had $25 million in revenue in fiscal 1996, produces Holos, a software environment for developing business intelligence applications.

"This opens up a whole new world for [Seagate] on the application side. This not only gives them the [query] tools, but the answers," said Cheryl Currid, president of Currid & Co., a consultancy in Houston.

"Buying Holistic [gives] Seagate the ability to take disparate sets of data and mesh them together to get the answers that companies need," she said. For example, "It dips below 'Cheryl Currid lives on Main Street and drives thia kind of car.' It [profiles] where and when does she buy gas, and what kind of gas.

"Now [Seagate has] this incredibly strong high-end product with Holos. It's kind of an unlikely pairing, but I don't think that's bad. They're pushing the edge of the technology envelope, and I think that's a gutsy move," Currid said.

Besides its Crystal line of query and reporting tools, *Seagate will now sell the Holos business intelligence package*

The Holistic acquisition is part of a trend toward consolidation in the OLAP market, where there have been several acquisitions lately, said Michael Joseph, an analyst at International Data Corp. in Framingham, Mass.

"The OLAP market is heating up and getting more dynamic," he said. "As companies make larger deals, they need more muscle to get in and make the sale."

Joseph said Holistic customers, which include AT&T Corp., Nike, Inc. and BT, can expect a shorter time between software releases because Seagate has deeper pockets to invest in research and development.

Jeff Higa, manager of data access at UniHealth America, Inc. in Burbank, Calif., has used Holos for two years to analyze the health care firm's financial, clinical and patient satisfaction information.

"[The acquisition] may help them narrow the time between releases," Higa said. "But I've really liked the intimate relationship we've had with Holistic. I hope that doesn't get lost, but I think that part may actually grow."

When Seagate bought Holistic, it shed a piece of its own business family. NStore Corp. bought Seagate Storage Systems Group, a $20 million RAID business that came with Seagate's purchase of Conner Peripherals, Inc. in February.

Seagate spokesman Woody Monroy said the sale won't change Seagate's focus or strategy. "A lot of our customers do RAID, and we don't want to compete with our customers," Monroy said. "That never was a business we intended to be in."

COMPUTERWORLD

Professional Courtesy Voucher

❑ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown ❑ Home ❑ Business ❑ New ❑ Renew Basic Rate: $48 per year

* U.S. Only. Canada $65. Mexico, Central/South America $150. Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars. For faster service fax your order to (508) 626-2705.

SAVINGS STATEMENT

Regular Subscription Price

$48.00

Your Special Price

$39.95

Your Savings

$8.05

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)

10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distributor/Reseller
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/Assistant VP IS/MIS/DP Mgmt.
21. Director/Mgr. MIS Services, Info. Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm.; LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D, Tech. Mgmt.
60. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase. (Circle all that apply)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NetX/Ware

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 50,000 +	❑	❑
B. 10,000 – 19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

B476 4

COMPUTERWORLD

Professional Courtesy Voucher

❑ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ❑ Home ❑ Business ❑ New ❑ Renew Basic Rate: $48 per year

* U.S. Only. Canada $65. Mexico, Central/South America $150. Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars. For faster service, fax your order to (508) 626-2705

SAVINGS STATEMENT

Regular Subscription Price

$48.00

Your Special Price

$39.95

Your Savings

$8.05

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)

10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government - State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distributor/Reseller
95. Other _____ (Please specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/DP MANAGEMENT

19. Chief Information Officer/Vice President/Assistant VP IS/MIS/DP Mgmt.
21. Director/Mgr. MIS Services, Info. Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D, Tech. Mgmt.
60. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT

11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT

80. Information Centers/Libraries, Educators, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase. (Circle all that apply)

Operating Systems

(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NetX/Ware

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 50,000 +	❑	❑
B. 10,000 – 19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

B476 4

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

SURF'S UP AGAIN

Back by popular demand, the September edition of Computerworld's Internet Resource Directory will be used by IS professionals as they build their organizations' intranets and Internet links.

Bound in the September 16 issue of Computerworld

Ad Close: July 26

Make sure you're in the 2nd edition of Computerworld's Internet Resource Directory.

Ride the Wave

Our second updated edition offers you a low cost, targeted opportunity to get your Internet/intranet product or service in front of IS buyers:

- **Arranged by major/sub major categories**
  Web servers, ISDN adapters, Web development tools, encryption software, security services, access providers, Web designers, and more.
- **Basic company listing available for as low as $250**
- **Leadership Presence Program, along with premium cover positions available**
- **Advance bonus distribution of the directory at**
  Internet Commerce Expo (Sept. 9-12/Anaheim, CA) & Electronic Commerce World (Sept. 9-12/Columbus, OH)

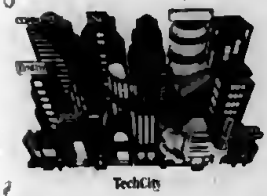
  - plus -
- **Bound in issue and distributed at**
  Networld + Interop (Sept. 18-20/Atlanta)

Catch the Wave

Get your listing and ad in front of the IT marketplace as they move into high gear building their organizations' intra- and Internet links:

- **Computerworld's subscriber base of over 145,000 information systems professionals**

  - plus -



- **The viewing audience of Computerworld TechCity**
  Our Internet Directory will be online in TechCity for six months, with a link to your Web site. To view the current edition of our Internet Resource Directory visit www.computerworld.com/techcity and click on Convention Center.

Place your listing and ad in the Fall Computerworld Internet Resource Directory

Northeast	Central & South	West Coast	Marketplace Sales Manager
Laurie Gomes	Ann Meleney	Claude Garbarino	Michelle Reeves
800/343-6474, ext. 7759	800/343-6474, ext. 8196	800/343-6474, ext. 6313	800/343-6474, ext. 8197
laurie_gomes@cw.com	ann_meleney@cw.com	claude_garbarino@cw.com	michelle_reeves@cw.com

COMPUTERWORLD
Everything you need to know.

1776.gov

Mr. Jefferson: Gentlemen, the summer grows hot, and it is essential that we complete this declaration of independence.

Mr. Franklin: Wait a minute, Thomas. I have to reboot here.

Mr. Jefferson: That's all right, Ben. We'll go on without you. Has everyone had a chance to look at the draft I posted yesterday?

Mr. Sherman: Not yet, Thomas. I've been having Notes replication problems.

Mr. Adams: Here, Roger, I brought a hard copy.

Mr. Sherman: Thanks. Saaaaay, nice font!

Mr. Adams: Do you like it? I downloaded it off Colonies Online just last week.

Mr. Jefferson: Gentlemen! There is work to be done. I fear our document will soon leak out.

Mr. Livingston: Too late, Thomas. There's already a bootleg circulating. I saw it posted on alt.georgeIII.sucks last night.

Mr. Franklin: @!*%#!. General Protection Fault!

Mr. Adams: Ben, you might try upgrading to Windows 75. It solved that problem for me.

Mr. Sherman: Thomas, the part here about the Acts of Pretended Legislation; have you considered using bullets to air out the text?

Mr. Jefferson: I can fix that easily enough. Drat! I've spilled candle wax on my keyboard again.

Mr. Adams: You know, Thomas, that wouldn't happen if you'd buy an active-matrix screen.

Mr. Franklin: Hard-disk failure?!? Aw, criminy.

Mr. Livingston: Are you sure it's "unalienable rights?" My spell checker recommends "unassailable."

Mr. Jefferson: Can we stick to the substance of the document, please? Shoot. Low battery. Anyone got a spare power cable?

Mr. Sherman: What have you got, a Toshiba? No, mine isn't compatible.

Mr. Franklin: Hello, PCs Philadelphia? What does it mean when the floppy drive buzzes? OK, I'll hold ....

Mr. Livingston: The "In Congress" part here at the top; have you thought about blowing that up really big and maybe centering it in 72-point Helvetica?

Mr. Jefferson: Not a bad idea. Aw, nuts! Word macro virus! I can't save the file.

Mr. Franklin: That's all right, Thomas. We can manage. Here, borrow my quill pen ....

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*
www.ultranet.com/~pgillin

OS/2, AS/400 also playing Web roles

Regarding your article "Microsoft builds Web into OS" [CW, June 17], I am quite sure IBM announced that Merlin (the next release of OS/2) will contain an integrated Web browser. I would not be surprised if your newspaper was one of the several places I saw that information.

So how is it that "Microsoft's Internet strategy differs from those of operating system rivals such as IBM, Novell, inc. and Sun Microsystems, Inc. They see Web functionality and system software as separate animals rather than a hybrid."

Once again, the 8 million or so users of OS/2 are overlooked.

Roger Rokweder
Channahon, Ill.

The "Microsoft builds Web into OS" article states that Microsoft is unique in planning to incorporate World Wide Web features in its NT operating system, and that companies such as IBM, Sun and Novell see Web functionality as a separate animal from the operating system.

I don't know about Sun and Novell, but as a longtime AS/400 user, I would say that not only is Microsoft not unique in incorporating the Web in its operating system, but its plans are light-years behind what IBM is delivering in OS/400.

OS/400 provides a Web server, POP-3 mail server and a file transfer protocol server in the shipping version of the operating system.

Microsoft is talking about providing tools to allow MS applications to be built to run on the Internet.

IBM is shipping, as part of its OS/400, a Hypertext Markup Language (HTML) gateway that allows every application ever written on an AS/400 to run on the Internet as HTML without having to make any modifications.

Many companies develop intranet applications from scratch, but OS/400 provides instant intranet for every AS/400 installation. The tens of thousands of industrial-strength AS/400 business applications are available to any client with a Web browser.

Microsoft talks about Internet security, but IBM delivers Security Level Encryption, which provides full point-to-point data encryption for each Internet session, firewall security and C2-level OS/400 object security.

John Lambert
Director of information systems
Trans Registry
Miami
jlambert@registrynet.com

Don't overlook Career Center

The Computer Careers article ["Job Surfing!" CW, June 17] didn't mention the Online Career Center, which is definitely one of the most important of the career-related Internet sites. Whether the criterion is usability, number of jobs posted or the ability to search for a specific industry or location, the center (www.occ.com/occ.TextHomePage.html) deserves to be mentioned.

John McLaughlin
Software Architects, Inc.
Tampa, Fla.

Microsoft playing catch-up on Java

I appreciated your article about the competition between Microsoft's Visual Basic and the Java consortium ["Visual Basic, Java vie for 'net crown," CW, June 10]. But the suggestion you made at the end of the piece, that Microsoft might win by creating "Visual Java," seems to ignore the already growing market for "VJ" products.

Among many, Borland is already demonstrating (and will soon release) Delphi for Java; VisualWave can create intelligent Java applications; and every day, more vendors announce similar functionality.

I would suggest that Microsoft has put itself in a difficult situation. It cannot support Java completely without doing itself harm in the ActiveX arena. It has to stand by and watch its competitors capture market share in the Java-development market.

Although most of those competitors will be much easier to displace than the likes of Sun, Netscape and IBM, the longer Microsoft waits, the more costly such competition becomes.

Harry J. Berkley
Director of information technology
W. R. Berkley Corp.
Hank@wrbc.com

■ Computerworld welcomes comments from its readers. Letters should not exceed 200 words and should be addressed to Paul Gillin, Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Verbatim

From a report by Waverly Deutsch, senior analyst at Forrester Research, Inc. in Cambridge, Mass.:

Setting standards on a limited set of foundation technologies — electronic mail, financial systems and TCP/IP networks — strengthens infrastructure stability. However, applying excessive resources to enforcing a multitude of corporate technology standards wastes time and money.

[Chief information officers] will continue to throw money out the window until they understand that you only get significant financial paybacks when you enforce foundation technology standards.

Trying to ram a single database or server configuration down everyone's throats only leads to disgruntled [information systems] employees and stealthy avoidance of standards.

Why? Because out in the business trenches, people need to solve problems yesterday. They will grab the tools that work to get the job done. Flexibility and responsiveness are more important than a corporatewide infrastructure policy.

Especially when dealing with emerging technology, CIOs will only wreak havoc with standards. No one knows how the Internet market is going to shake out. Banking on the wrong vendor too soon could take a company down the path of missed opportunity and obsolete technology, forcing companies to spend twice as much to get themselves back on track. . . .

CIOs can reap [the same benefits of standards] by offering incentives to choose from a recommended products list. Using a carrot rather than a stick will eliminate bad blood between central IS and the business units.

Negotiating volume purchase agreements, offering superior support on favored technologies and including IS people in the evaluation process are excellent techniques to encourage naturally occurring standards.

Helpful hints for scrubbing cyberspace

Michael Cohn

Here's a revolutionary six-point plan to keep cyberporn from polluting our delicate pixels.

Erotica is ruining the Internet. Cyberporn is polluting our pixels. But any time we clean-living Americans try to do something about it, a handful of pimple-ridden techies scream about the Constitution. Meanwhile, I'm convinced my 6-year-old is having an intimate electronic relationship with ursula@swinging.sauna.com, downloading who-knows-what at 75 cents per minute.

The problem is that we can't agree on how to censor cyberspace. Fear not; I have a wealth of ways to wipe out PC porn without stepping on anyone's inalienable compurights. Let's try a few of these, and clean up the 'net once and for all — except for maybe when I'm logged on late at night, and nobody's looking.

1. Proximity. Like it or not, we can't just ban words such as "buns" or "breast." That's because they may be included in legitimate topics such as "hamburger buns" or "chicken breast." But let's censor naughty body parts when some sicko tries to sneak an even naughtier adjective in close proximity — especially if describing size or temperature. Granted, someone might complain if we inadvertently censored a chat about "hot, tender chicken breasts." But if you're a chicken, it's for your own good.

2. Shape censorship. Computers can recognize images, and software can detect shapes. So let's find the dirty ones and scrub up cyberspace. You want to keep nudity off the network? Then intercept anything even remotely shaped like a woman under 150 pounds, or a man over 150 pounds, or a man with a woman, or any multiples thereof. With today's technology, we can give the go-ahead to only those images that show men and women wearing lots of clothes — unless they are wearing each other's clothes.

3. Bandwidth police. Now we've got to monitor videoconferencing! There are all kinds of legitimate medical and techno-training uses for cybervideo, but someone's always trying to sneak in *Debbie Does DASD*. So how do you tell X-rays from X-rated? I say, if it comes across the 'net with grunts and groans, censor it. Heavy breathing? Odds are it's porn. Then again, if it's heavy smoking, it's probably videoconferencing.

4. Biofeedback. Heck, you're already clutching a mouse. So let's put a pulse sensor in there to monitor blood pressure. If you start puffing and panting or get a little excited . . . wham! We'll power down the system, wipe out the screen, and stop cybersmut in its tracks. Of course, you might have a similar physiological response if you check the stock-quotes service after the Dow drops 200 points. Either way, it's probably a good idea to log off, and take a cold shower.

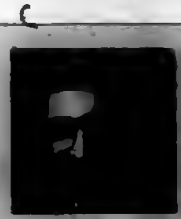
5. Browsing the browsers. Censorship isn't the problem — privacy is. Get rid of anonymity on the 'net, and folks would be on their best behavior. Let everyone access whatever they want — just ensure that every click and keystroke is recorded. Oh, don't give me any of that First Amendment stuff. Your spouse, your colleagues and even your boss have the right to know if you've just spent six hours browsing www.australian.erotica.com — especially if you were supposed to be in a meeting.

6. Consider the source. When it comes to filth, forget the users. It's the providers that are soiling the superhighway. Ban anything put online by convicted sex offenders, porn publishers, college fraternities or anyone associated with MTV. Let's screen at the source, and clean up the World Wide Web in a weekend! I'd especially keep an eye on anything from my stepbrother in Cincinnati. I'm telling you, the guy is one sick puppy.

Cohn works at a large computer company in Atlanta. He strives to keep cyberspace safe for users with less than 16M bytes of memory.

All eyes on the Network Computer

Richard Finkelstein



An evangelist lays out a detailed, three-year timetable for world domination by the Internet terminal.

Here's a prediction from an unabashed enthusiast of the low-cost, low-maintenance Network Computer (NC): The NC eventually will displace PCs as the preferred desktop machine for large organizations and home users.

This won't happen overnight, of course, but it will happen much faster than most people expect. What follows is the scenario under which NCs will be accepted as a mainstream alternative to PCs within three years.

Early adoption (early 1997): Universities adopt NCs for cost advantages. Hotels install NCs in lobbies and rooms for business travelers. Corporations buy some NCs for executives and salespeople on a trial basis. Analysts and writers who pooh-poohed NCs buy one to show off to friends.

First applications (mid-1997): Large organizations begin replacing dumb terminals with NCs. AS/400, Unix and mainframe applications get a much-needed facelift. Legacy applications get new life from browser and Java capabilities.

Information systems people are surprised at how easy it is to re-engineer applications by using Internet, intranet and NC technologies because existing applications and databases can be used. There's no need to totally rewrite and relocate applications for PCs and client/server systems. Installation, training and maintenance costs for NCs are a fraction of the costs associated with PCs.

Corporations start to deploy NCs in branch offices for decision-support and light data-entry applications. Government agencies begin pilot programs to deploy NCs as low-cost information kiosks.

Second wave (late 1997): Internet and intranet systems with NCs are deployed for data entry, order entry and reservation functions. NCs become widely used in elementary and high schools. Nonprofit organizations just say "no" to continuous PC upgrade costs, and jump on the NC bandwagon. NCs — now equipped with locally stored Java-based word processors, spreadsheets and personal information managers — replace laptop PCs. NCs are hot Christmas gifts.

NCs go mainstream (early 1998): NCs begin to penetrate PC strongholds. Organizations install word processors and spreadsheets on Java LAN servers. Rather than migrate to the new Windows operating system, organizations replace PCs with NCs. IS shops find centrally deployed Java applications much easier to deploy and maintain.

Next, PC-based client/server applications are replaced by intranet/NC applications. Major vendors announce intranet/NC-enabled versions of their payroll, accounting and manufacturing software.

NCs everywhere (late 1988): NC kiosks are available in real estate offices, automobile dealerships, shopping malls and airports. Specialized telephone NCs break through price barriers. Cellular NCs are the rage. Microsoft announces the PC is dead and rushes out its own NC renamed the MC (Microsoft Computer). Larry Ellison is named Soothsayer of the Decade.

Three years might seem to be a very aggressive schedule. But who would have guessed even a year ago that intranets would be so widely embraced in such a short time? NCs aren't for everyone. They are for information consumers. PCs are for information producers. But the former far outnumber the latter.

Finkelstein is president of Links Technology Corp., a consultancy in Chicago. His Internet address is finkel@links.com. A white paper on this topic is available at www.links.com.

#1
in FDDI Switching for revenue and ports worldwide–Dell'Oro Group

#1
in Remote Access Server ports shipped–IDC

#2
in Ethernet LAN Switching ports worldwide–Dataquest

#2
in FDDI Hub revenue and ports–IDC

#3
in LAN Switching revenue worldwide–IDC

envISN™

Enterprise Virtual Intelligent Switched Networks·
Digital's comprehensive road map from wherever you are now to the virtual networking of the future.

DIGITAL NETWORKS
1-800-457-8211

☐ *Please send me information on Digital networking products.*
☐ *Please have a Digital representative contact me.*

enVISN™

Name _____

Title _____

Company _____

Type of Business _____

Address _____

City _____ *State* _____ *Zip* _____

Phone (____) _____

E-mail address _____

digital™

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO 79 WESTFORD MA

POSTAGE WILL BE PAID BY ADDRESSEE

digital™

DIGITAL EQUIPMENT CORPORATION
PO BOX 687
WESTFORD MA 01886-9902

THE HUBS, ROUTERS AND SWITCHES ARE FOR SALE. THE VISION WE'LL THROW IN FOR FREE.

Navigating your network into an uncertain future is no job for the short-sighted. Which means it's the ideal job for Digital. From routers to enterprise switches to advanced management software, Digital solutions are uniquely flexible. They support Ethernet, Fast Ethernet, Token Ring, FDDI, ATM—and whatever comes after. And they're effortlessly scalable—from today's desktop LAN to tomorrow's worldwide DIGITAL NETWORKS *enterprise. No wonder Digital ranks in the top tier of network suppliers, all over the world. If Digital's quality, reliability and vision have earned a place in so many networks, ask yourself: Shouldn't you be looking at Digital? For more information, call your Digital Business Partner or* **1-800-457-8211**. *Or set your browser for* **www.networks.digital.com**.

digital™
WHATEVER IT TAKES™

©1996 Digital Equipment Corporation. Digital, the DIGITAL logo and the mVION logo are trademarks and Whatever it Takes is a service mark of Digital Equipment Corp. All other products are trademarks or registered trademarks of their respective companies.

In order to make the right decisions, you've got to have the big picture. But where is it?

What computing solutions do you have?

You should have OpenView solutions from Hewlett-Packard, the clear leader in integrated network and systems management. HP OpenView gives you the power to evolve your IT environment as quickly as your business. We've already provided thousands of companies around the globe with higher service levels and availability. And we can do the same for you. If the business decisions are yours, the computing solutions should be ours.

HP OPENVIEW

www.hp.com/go/openview

©1996 Hewlett-Packard Company

HEWLETT® PACKARD

PC Expo offers everything from Top 10 lists to wooden cows, 41

Servers & PCs

Videoconferencing in sight

By Mindy Blodgett

Attendees at the recent PC Expo buzzed about the technology Intel Corp. said it may deliver by year's end: videoconferencing for laptops.

Intel said it will build multimedia extensions in to the 150- and 160-MHz processors the company expects to ship by the end of the year. The move will let laptops perform tasks, such as videoconferencing, without extensive add-on appliances.

But industry analysts said they wonder whether videoconferencing is a feature notebook users want.

"I just can't see very many people desperately wanting to videoconference on their laptops," said Randal Giusto, an analyst at International Data Corp. in Framingham, Mass.

Gerry Purdy, an analyst at Mobile Insights, Inc. in Mountain View, Calif., said laptop videoconferencing "may play out with a small segment of the market."

But some users said they are intrigued by the possibility of being able to use notebook PCs to keep in visual and audio contact with colleagues and clients.

"I've already had executives asking about it," said Doug Moran, information systems analyst at CRSS Constructors, Inc. in Denver. "I wonder how it would work, since we are bound by the limitations" of telephone landlines, he said. "But I certainly have users anxious for the capability."

Notebooks

But Jack Frame, vice president of sales at Corestates Bank in Philadelphia, said he wonders how well laptop videoconferencing would work.

"We can't get it to work too well with desktops," Frame said. "It only works well about 50% of the time. But it might be helpful to have the option."

Users have an array of new notebooks to choose from in the wake of PC Expo. They include the following:

- **Compaq Computer Corp.** in Houston, in an effort to re-energize its flagging portable lineup, has introduced a line of low-end and midrange portables that will ship next month.

The Armada line includes the 4100, a slim notebook. Pricing for the 4100 starts at $2,599 for a 100-MHz Pentium-powered model.

The slim model of the Armada weighs about 5 pounds and is available with a 11.3-in. passive-matrix or 11.8-in. active-matrix color display. The weight jumps to more than 6 pounds when the mobile CD-ROM unit is added. The unit includes speakers and an additional battery. Fully configured models cost about $4,599.

Pricing for the Armada 1100 starts at $1,899 for a unit powered by a 100-MHz Pentium chip. The no-frills system has a 10.4-in. color display.

- **Acer America Corp.** in San Jose, Calif., has released the AcerNote Nuovo with a 133-MHz processor and 16M bytes of memory that can be upgraded to 64M bytes. It has an 11.8-in. active-matrix screen. The notebooks will be available in August and will cost between $3,499 and $3,999.
- **Unisys Corp.** in San Jose has released the Aquanta MN notebook, with a 120-MHz processor and a 10.4-in. active-matrix or dual-scan screen. The Aquanta MN costs about $2,100.

Senior editor Bob Francis contributed to this report.

Features of the Compaq Armada 4100

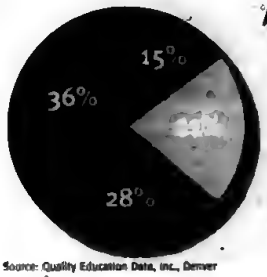
Processor:	100-MHz to 133-MHz Pentium
Size:	1.5 inches thick
Weight:	5 to 6 pounds
Screen:	11.3-in. color or 11.8-in. color thin-film transistor
Battery:	Space for up to three lithium ion
Starting price:	$2,599

Apple develops new products to maintain its class standing

By Lisa Picarille

School is out for summer, but Apple Computer, Inc. is doing extra homework to make sure the Macintosh will continue to be teacher's pet this fall.

To help counter a growing tide of PC use in one of its core markets, the Cupertino, Calif.-based company is streamlining its unwieldy product line and developing oem machines in time for the start of school in September.



Apple is the teacher's pet

1995 to 1996 installed base in grades K-12

- Macintosh
- Apple IIGS
- IBM desktop
- Other PC compatibles

Total: 4.4 million

Source: Quality Education Data, Inc., Denver

Market threat

Apple has traditionally dominated in the classroom. Although Apple's share of the market for kindergarten through grade 12 has risen from 51% for 1992 to 1993, to 64% for 1994 to 1995, Apple is under attack from PC makers — including IBM, Compaq Computer Corp. and Zenith Data Systems.

In a recent study of educators' purchasing plans, 7% of the respondents said they plan to buy systems from Compaq, up from 4% for the previous year. Meanwhile, the percentage of users who plan to buy Macintoshes held steady at 61%, according to the poll. The study was done by Quality Education Data (QED), a research firm in Denver.

Of the 236 school districts surveyed, 18% said they plan to buy IBM machines — more than double the previous year's figure.

PC companies are gaining ground by targeting K-12 districts that are updating antiquated Apple II machines — an education staple for more than a decade. Apple stopped manufacturing Apple IIs more than six years ago.

These educators need to de-

Apple, page 41

Air-cooled Amdahl

By Michael Goldberg

Amdahl Corp. plans to hang its banner over the air-cooled mainframe frontier this summer with the introduction of the System/390-compatible Millennium Global Server.

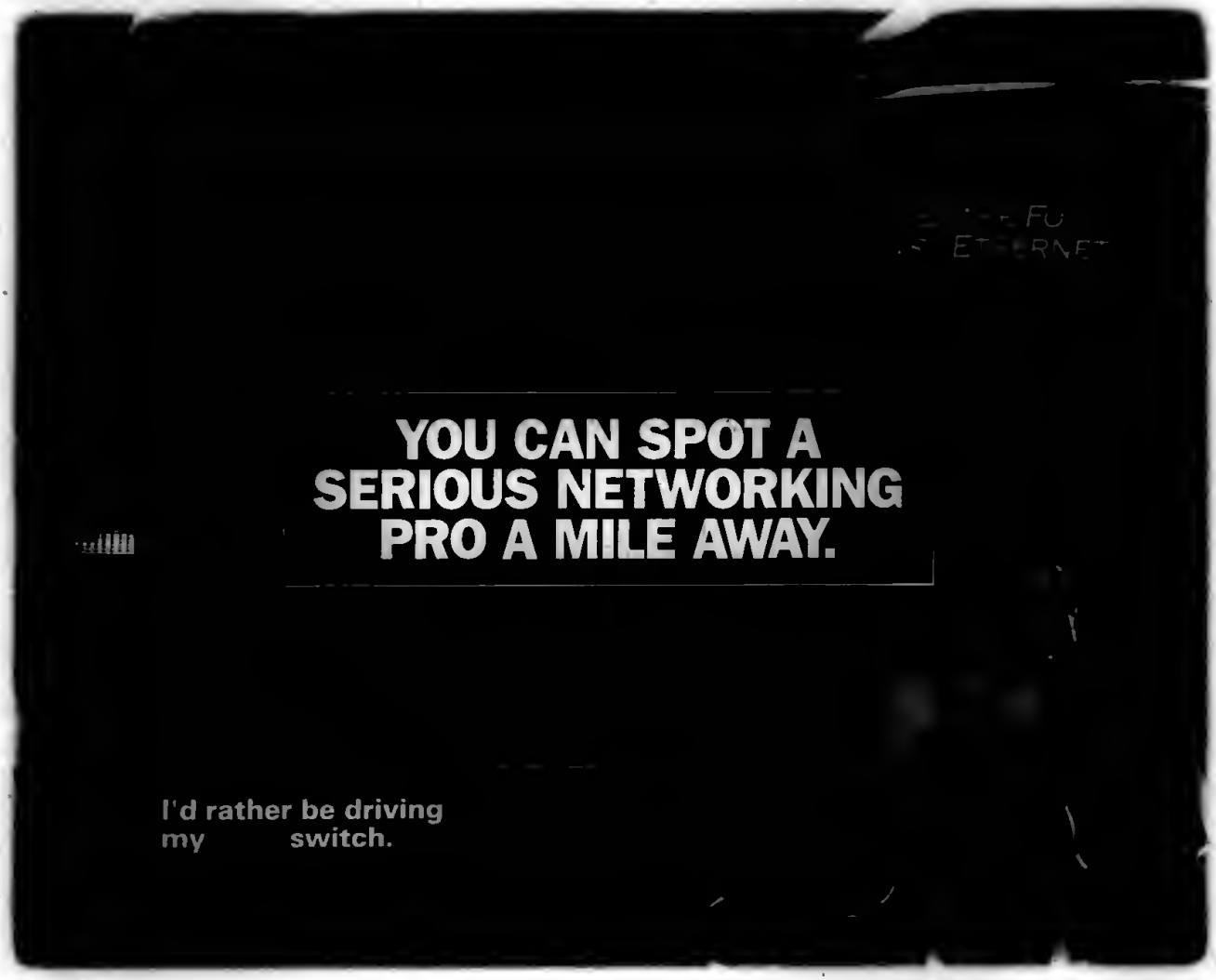
At 45 MIPS for a uniprocessor model, the Millennium packs a competitive performance punch in a field that is gradually migrating toward products based on CMOS processors. These processors require less energy to operate than their older water-cooled, bipolar cousins.

Hitachi Data Systems Corp. will release the Pilot series of CMOS-based mainframes this fall. And IBM, which leads the CMOS pack, is expected to release a second-generation series of air-cooled mainframes later this year, analysts said.

Even though IBM remains the prime supplier of System/390 operating systems and other software releases, observers said that having two alternative hardware choices prompts price competition for mainframe consumers.

Amdahl, page 41

The Millennium Global Server, *Amdahl's first air-cooled mainframe, can hold two System/390-compatible servers in one cabinet*



When serious networking pros want to get up to speed on everything from LANs to global enterprise networks to the Internet, they floor it straight for one place: NetWorld™+Interop® in Atlanta. NetWorld+Interop brings together more than 500 of the world's top vendors and thousands of the latest products. All connected via our 6000 node, multivendor, multiprotocol network proving ground—the InteropNet™. So you can see 100 Mb/s Ethernet technologies. Switching and routing. Internet and intranet. Plus wireless, ATM, LAN emulation, Fibre Channel, frame relay transports, and hundreds more. Pure and simple, NetWorld+Interop is about interoperability. Whether you're integrating classical networks with cutting-edge technologies, or starting from scratch. And with 50,000 colleagues and experts on-site, you'll get even your toughest questions answered. So if you're serious about networking, save $50 by registering free today at www.interop.com. You'll be speeding along in no time.

NETWORLD+INTEROP

CONFERENCE: SEPT. 16–20 • EXHIBITION: SEPT. 18–20 • GEORGIA WORLD CONGRESS CENTER • ATLANTA, GEORGIA

Save $50 and register FREE at http://www.interop.com • Or call 800-488-2883

Outside the U.S. call 415-578-6900. ©1996 SOFTBANK Expos. Interop is a registered trademark of SOFTBANK Expos. NetWorld is a service mark of Novell Inc. Other names are the property of their respective holders.

Top 10 list, wooden cows enliven Expo

By Kim S. Nash

After a bastardized, buzzword-laden version of the tune "You Ain't Seen Nothin' Yet," **Sun Microsystems, Inc.** CEO Scott McNealy spent 40 minutes at PC Expo running down the competition.

He poked fun at other industry bigwigs in a David Letterman-style Top 10 list of reasons McNealy was invited to the show.

A sample: **Compaq Computer Corp.**'s Eckherd Pfeiffer couldn't come because he got the stomach flu: it was a case of Intel inside, McNealy quipped.

Later, he derided **Microsoft Corp.**'s Internet strategy as proprietary and built on clunky technology.

The speech amounted to a long, free advertisement for Sun's Java programming language, which McNealy called an industry standard.

Everything from **Gateway 2000, Inc.**'s big wooden cows to women in tight red dresses greeted exhibit hall visitors. Elsewhere on the floor, a guy in a fuzzy dog suit beckoned people to his booth. Even the notoriously sensational *New York Post* got into the act by distributing a computer advertising supplement.

But show attendees seemed more interested in collecting free copies of an issue that had the giant headline "Granny in the Slammer."

In denial

After his keynote address, Jim Barksdale denied that **Netscape Communications Corp.** is talking with **Lotus Development Corp.** or **IBM** about licensing pieces of Notes, as reported in *Fortune* and *The Wall Street Journal* recently.

"We look at thousands of [technologies] per month" to potentially integrate with Netscape's Web software, Barksdale said.

Lotus is "adopting the same [Internet] standards we're talking about. We don't see that we have to do anything more than that," the CEO said.

Booth buddies

Young Boothie No. 1 (excitedly): Did you get that Lotus stuff that I forwarded to you on E-mail? Was it anything important?

Experienced Boothie No. 2 (laughing): Nah!

Here come the Sun guys

Sun Son No. 1: I'm still trying to figure out what we're announcing today.

Sun Son No. 2: Ah, you'll know it when it happens.

Sun Son No. 1: Sometimes they send the press release out, and you don't even know what it is. You tell [the marketing people] something, and they send it out 90 seconds later.

New Products

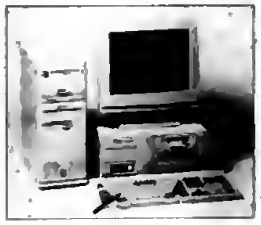
Panasonic Computer Peripheral Co. has introduced KX-PS600, a personal image editing system designed for Windows users.

According to the Secaucus, N.J., company, the system is a combination laser printer, scanner and copier with software that lets users edit and file scanned input and send scanned images and documents by fax or electronic mail. It prints six pages per minute at 600 dot/in. resolution.

Pricing starts at $699.

▶ *Panasonic Computer Peripheral*
(201) 348-7000
www.panasonic.com

CSS Laboratories, Inc. has introduced Preferred TR2, a mid-size PC based on Intel Corp.'s Triton II chip set with a Universal Serial Bus port.



According to the Irvine, Calif., company, Preferred TR2 can be fully customized.

It features concurrent Peripheral Component Interconnect (PCI), which was designed to maximize system performance with simultaneous activity of the CPU, PCI and Industry Standard Architecture buses. It has six expansion bus slots.

Pricing for Preferred TR2 systems starts at $1,500 and is based on specific configuration.

▶ *CSS Laboratories*
(714) 852-8161
www.csslabs.com

Digital Ocean, Inc. has introduced Tarpon, a rugged, weather-resistant personal digital assistant.

According to the Lenexa, Kan., company, Tarpon is based on Apple Computer, Inc.'s Newton 2.0 operating system and features a built-in wireless LAN receiver and handwriting-recognition software.

The product supports forms-based data entry, optional voice communications, integrated wireless LAN and Global Positioning Systems.

Pricing for Tarpon starts at $3,300.

▶ *Digital Ocean*
(913) 888-3380
www.digitalocean.com

Product shorts

SanDisk Corp. has announced CompactFlash, an industry-standard, removable, ultrasmall flash storage device for use with digital cameras. The half-ounce, 4M-byte cartridge can store up to 72 images and takes the place of conventional film. It is inserted into the passive 68-pin adapter Type II card. Pricing: Starts at $229. SanDisk, Santa Clara, Calif. (408) 562-0500; www.sandisk.com.

Dataprobe, Inc. has introduced Loud, a single-channel, multifunction alarm annunciator. Loud produces an 80-decibel alarm that can be activated by a PC's internal speaker. The product lets users program alerts in the case of specific events, including end of uploads or alarm conditions. It includes supplied lead connections and a power supply. Price: $125. Dataprobe, Paramus, N.J. (201) 967-9300.

Apple is seeking some extra credit

CONTINUED FROM PAGE 39

cide whether to upgrade to Macintoshes or switch to PCs. In some cases, the move to PCs is the result of pressure from high-ranking school administrators.

"Just this morning, I got back a memo I sent the superintendent, asking for approval to buy more Macs," said Kevin Kelly, educational and technology coordinator at Plymouth School District, which oversees 12 schools in Plymouth, Mass. "And in green ink across my memo, he wrote 'Rather get into PC platform.' When I followed up with him, he said he was concerned about Apple's future."

Kelly said his district will cut back on the number of Macintoshes it purchases. "We expect that our ratio will change from 60% Macs and Apple IIs and 40% Windows/DOS to 50/50 over the next year and a half," he said.

But Jeanne Hayes, president of QED, said although Compaq and IBM are coming on strong in education, Apple's strong brand loyalty will ultimately prevail. Other industry observers agreed; they pointed out that Apple's strength is in providing a turnkey package of hardware and software for schools.

But, in some cases, brand loyalty is outweighed by budget constraints.

College choice

Apple officials admitted that the Macintosh fares better in private colleges and research-oriented universities and not as well at cost-conscious state schools and community colleges.

"There are a greater number of business applications and mission-critical application choices for the PC environment," said Sue Rusiecki, lead consultant in end user services for Macintosh computers at Mount Holyoke College. The private college in South Hadley, Mass., has about 1,000 computers; half of those machines are Macintoshes.

At the college level, some of the pressure to move away from the Macintosh comes from the notion that students should be prepared for the "real world," in which more than 80% of businesses use PCs. Apple expects its biggest education opportunity will come from the Internet.

The firm plans to provide less-expensive information appliances and administrative tools that are based on Java and OpenDoc, said Pat Montgomery, senior vice president of worldwide educational marketing at Apple.

Amdahl reaches Millennium

CONTINUED FROM PAGE 39

Amdahl in Sunnyvale, Calif., seeks to differentiate itself by offering a package that can combine two eight-processor mainframes in one cabinet. Each side can house a System/390 compatible system or a Millennium Coupling Server, to build a Parallel Sysplex complex of connected mainframes.

The Coupling Server will be available in the first quarter next year, Amdahl officials said.

Size-wise

Space is at a premium on the data center floor, so anything a vendor can do to cut the size and operating costs of traditionally broad-shouldered machines is a boost, said Joyce Green, senior vice president of technology services at Affiliated Computer Services, Inc. (ACS). ACS is an outsourcing company in Dallas that maintains a data center that packs 2,000 MIPS and 7T bytes of data.

Performance is another consideration with CMOS.

Green said it appears "Amdahl will be the first in providing the performance, the robustness of the engines" that he is seeking from mainframe vendors.

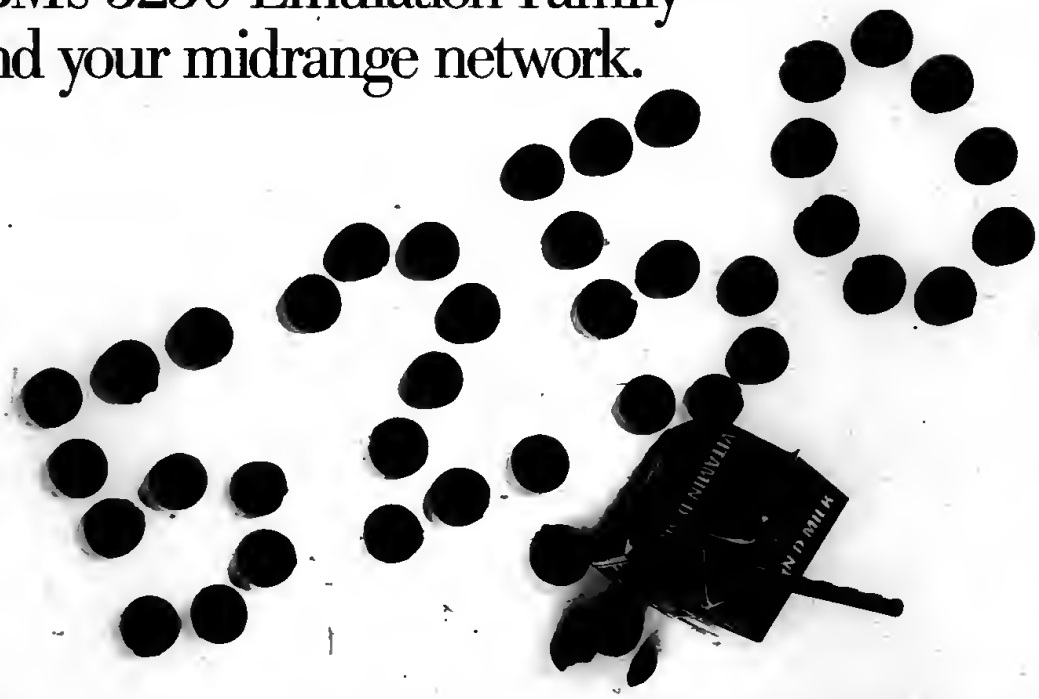
The Millennium models come with an eight-processor module installed, and Amdahl activates the processors through software commands — a process that the vendor can do remotely," said Kathryn Gorges, manager of processor marketing at Amdahl.

Carl Greiner, an analyst at Meta Group, Inc. in Stamford, Conn., said these kinds of packaging considerations — the two mainframes in one box and the eight processors ready to go — were imaginative.

But Greiner said these creative moves don't eliminate complexity for users who, for example, still need to build connections between two System/390 servers in one box just as they would if the servers were across the room from each other.

Amdahl has sought to diversify its business by reselling Sun Microsystems, Inc. servers, making its own Windows NT servers and providing systems-integration services through subsidiaries such as Trecom Business Systems, Inc.

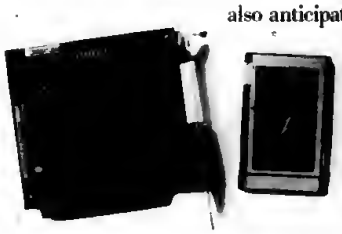
IBM's 5250 Emulation Family and your midrange network.



Everyone agrees nothing goes together better.

The idea of a perfectly compatible midrange network – where computers can easily and reliably share information – is what everyone is aiming for.

Thanks to the IBM 5250 Emulation Family, we're delivering on a promise of compatibility in connecting your PC's to midrange systems, like the AS/400, System/36 and System/38.



From the most simple connections to the most complex, the 5250 Family provides superior quality and compatibility to suit your evolving needs. As a result, any 5250 twinaxial solution you choose will grow with your business.

Better still, IBM's 5250 is a total solution of hardware and software that not only solves connectivity problems across your enterprise but also anticipates them before they occur.

No one else has IBM's product depth or proven support, which makes us an ideal choice for your midrange connectivity needs. To learn more, call us today. We're your local IBM Distributor/Business Partner.

IBM's 5250 Emulation Family. Nothing brings it all together better.

Compatible with you.

Computer Products Corporation 1-800-727-7733

Data Resource Group 1-888-DRG-4IBM

SUPPORTNET 1-800-216-9666

Pacific Mountain Computer Products 1-800-423-2853

Object ORIENTED
Borland adds object-oriented analysis and design to its C++ suite. 44

Software

Transactions link to objects

Vendors move to combine technologies

By Craig Stedman

Transaction monitor vendors will tighten their embrace of object technology in the second half of this year. That should help make the software less imposing to corporate developers, observers agreed.

Combining objects and transaction monitors mixes the scalability, robustness and data integrity that transaction monitors promise with the streamlined development and code-reuse capabilities of objects.

"Having an object-oriented approach would make it easier for people," said Ed Wehner, manager of business information systems at MEMC Electronic Materials, Inc. in St. Peters, Mo.

MEMC, a maker of semiconductor wafers, uses the Unix version of IBM's CICS transaction monitor to run its order and production management system. The company is interested in the emerging linkages to object languages and object request brokers, Wehner said.

The need to learn procedural application programming interfaces (API) "is one of the reasons why people are scared of using transaction monitors now," said Karen Boucher, an analyst at The Standish Group International, Inc. in Dennis, Mass. Object technology would shield developers from the transaction APIs and let them do more business-centric programming, she added.

Tighter transaction-to-object ties that are scheduled to start seeing the light of day this year include the following:

- IBM, which in March shipped Windows and OS/2 CICS clients with support for C++ objects, plans to add Smalltalk and Object Cobol options by linking the products to its System Object Model technology. A beta-test release is due in October, and general availability should follow late this year or early next year.
- Transarc Corp., a subsidiary of IBM, will tie its Encina software to Iona Technologies, Inc.'s Orbix object request broker, sources said. That would let Encina use Orbix to pass objects among different systems on a network. A beta-test release is expected late this year.
- NCR Corp. plans a fourth-quarter release of links between its Top End transaction monitor and Microsoft Corp.'s component-based ActiveX development environment for Windows clients. Top End will also be tied to Common Object Request Broker Architecture (CORBA) interfaces in some development tools.

MEMC's Ed Wehner says three-tier applications built around transaction monitors 'aren't the typical Unix way' now because of developmental complexities

IBM is expected to introduce direct connections to CORBA request brokers next year. BEA Systems, Inc. and UniKix Technologies, Inc., which develop the Tuxedo and UniKix transaction monitors, respectively, also have plans for direct connections. CORBA is an industry standard for routing objects around a network.

"People balk at [transaction software] because it's more work than using a two-tier database model," said Morrie Segal, technology manager at Federal Data Corp. in Bethesda, Md. "It's much more capable, but you have to do a lot of extra stuff" that objects might minimize, he added. Federal Data is a systems integrator that is building a Tuxedo-based claims-processing system for the U.S. Department of Veterans Affairs.

Exchange users Find more info

By Tim Ouellette

Search tools

Seek, and ye shall find.

Or, in the case of Fulcrum Technologies, Inc.'s upgraded add-on to Microsoft Corp.'s Exchange Server, use Find, and ye shall seek.

By year's end, Fulcrum plans to upgrade its Find search tool — which provides full-text searching for Exchange-based information — to give users access to more folders inside Exchange than the basic Exchange software provides.

At the same time, users will be able to search repositories on World Wide Web sites or other office systems outside of Exchange. The Exchange version of Find shipped in April.

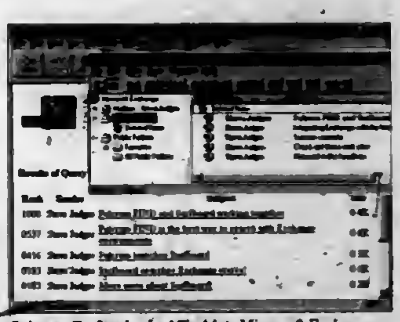
Microsoft purposely provided only a basic search feature capability in Exchange to allow third-party developers such as Fulcrum and Verity, Inc. to add more options, speed and power for users. For example, both Find and Verity's TopicSearch for Exchange can search multiple Exchange folders at once. Exchange searches folder by folder and takes much longer than the third-party tools.

In the third quarter, Ottawa-based Fulcrum will add the ability to search private message folders — provided that owners approve — in Exchange, which will give users broader access to information stored in an Exchange system. Fulcrum will also begin beta-testing a Find application programming interface to integrate Find with Exchange-based applications.

Previously, Find users could search only publicly accessible Exchange folders, which limited the amount of information they could locate. An Exchange system typically contains a mix of users' private message folders and publicly accessible folders.

By the fourth quarter, Fulcrum will add the ability to search Web repositories and other business software files from within Exchange, as well as a feature to allow searches of Exchange folders from a Web browser.

Fulcrum's product actually enticed one site to choose Exchange over other groupware products when it decided to upgrade from Microsoft Mail.



Fulcrum Technologies' Find lets Microsoft Exchange users search indexed Web-site repositories

"We really thought Exchange would fulfill our needs because we found out about the Fulcrum add-on," said Despina Giannopoulis, a senior systems analyst at Parsons Brinckerhoff, a transportation engineering firm in New York.

The company wanted to use groupware as a reference library for company manuals, Giannopoulis said. The firm decided that Find, with Exchange, tracked documents much better than other groupware products, she said.

Fulcrum's Find costs $39 per client and $1,495 for the Find server, which provides the indexing for document searches.

Object modeling set for Borland C++

By Frank Hayes

Hoping to make C++ development easier for corporate development teams, Borland International, Inc. will add object-oriented analysis and design capabilities to its C++ programming suite.

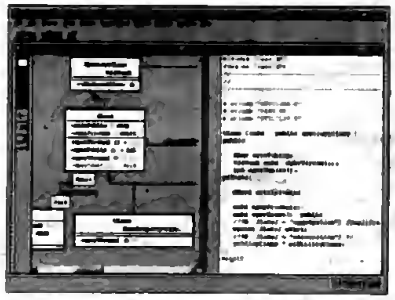
Scotts Valley, Calif.-based Borland last week said it will bundle the Together/C++ object modeling tool set from Object International, Inc. in Raleigh, N.C., with Borland C++. The upgraded version, known as Borland C++ Development Suite with Design Tools 5.0, will cost $850 and ships this summer.

Users said the combination will make it easier to design large projects and will let developers do "round-trip" software engineering. That refers to the process in which changes to a program can be made either in C++ code or by modifying a diagram of the application's object model.

Less tedious

"With other tools, it's a tedious process of keeping the two in sync," said Michael Anton, vice president and manager of fixed-income systems at Sanford C. Bernstein and Co., a New York investment company. "If you make changes to the source code and don't import it into the object model, you have to do your work again."

As a result, developers tend not to switch back and forth between modes, so they lose much of the value of the modeling system. The new tools store the object model as C++ code, so the two views can't fall out of sync, said Anton, who has tested the combined version.



Borland's C++ suite *will allow changes with an object model diagram (left side of screen) or through C++ code*

The combination's object-model editor supports Object Modeling Technology, Coad and Unified object modeling notations. Developers can mix and match notations within a project.

The modeling tool set can also be used to reverse-engineer existing C++ code, including C++ libraries such as Microsoft Corp.'s Microsoft Foundation Classes.

Making sense of other developers' code is a vexing problem for C++ code maintenance, said Brian D. Coryell, data processing manager at Parman, Tanner, Soule & Jackson, an accounting firm in Arkansas City, Kan. Object-oriented C++ programs rely on "inheritance" — the ability to create a modified version of a software object without changing the original. But this can make programs complex and difficult to understand.

"Inheritance is great as long as you wrote the original module, too," Coryell said. "But if somebody hands you [a piece of code], there's a lot you don't know about it."

Making routine paperwork automatic

More administrative processes move to electronic forms

By April Jacobs

Workflow technology isn't just for business processes anymore. Now even administrative paperwork such as human resources forms are being targeted for automation.

Workflow

In fact, more companies are reaching for electronic forms to carry out everyday tasks that used to get done via "sneakernet." And JetForm Corp. in Ottawa hopes its new products will fill that niche.

The company will introduce its Workflow and Filler Pro applications next month. Workflow was designed to handle administrative paperwork such as expense reports, purchase orders and human resources forms. Filler Pro lets users fill in and route forms such as purchase requests. Workflow allows users to set up workflow processes and rules.

Paul Farrand, assistant director of automated forms technology services at insurance firm Cigna Corp., said his company, which has traditionally been a paper-intensive environment, already uses workflow processes.

Cigna decided to look at ways to expand its existing workflow system to handle administrative tasks. The system helps to automate the processing of customers' requests for claim forms.

"We have 22 standard claim forms for health, vision and disability. We cut a process of 21 days to 24 to 48 hours," he said, explaining that generation of customized forms used to be a lengthy process.

Farrand said the company is considering automating a few internal processes, such as workflow related to orders and requests as well as purchasing processes.

Ad hoc routing

Carl Frappaolo, executive vice president of Boston-based Delphi Consulting Group, said more companies will start using more than one workflow product to handle business process and administrative tasks. "There's a need to do ad hoc routing of forms for very specific one-time business purposes," he added.

Scott McCready, an analyst at International Data Corp. in Framingham, Mass., agreed that the market for administrative workflow is growing and gaining wider acceptance. "People were using Microsoft Mail for these types of applications, [but] this is more ad hoc and gives them general capabilities," he said.

New Products

DSP Development Corp. has announced Dadisp, a graphic spreadsheet for scientific data analysis.

According to officials at the Cambridge, Mass., company, Dadisp analyzes data collected in Microsoft Corp.'s Excel and displays it in graphical forms. It lets users build complex programs or analysis chains by linking functions through a series of interactive analysis cells.

Dadisp costs $1,895.

▶ *DSP Development*
(617) 577-1133
www.dadisp.com

Kruse, Inc. has introduced Kruse Control 2.0 for Windows, document management software.

According to officials at the Downingtown, Pa., company, Kruse Control 2.0 for Windows lets users find, view, secure and share engineering information throughout an organization.

Users can view drawings created with computer-aided design (CAD) software without having the CAD software installed on their workstations. It supports redlining for CAD drawing and image file markups.

The software includes a scanner interface to simplify scanning and organizing paper documents and a viewer that supports more than 150 file formats.

Pricing for Kruse Control 2.0 for Windows starts at $249 per seat.

▶ *Kruse*
(610) 269-9220

Briefs

GIS under Windows

Environmental Systems Research Institute, Inc. (ESRI) in Redlands, Calif., will make Arc/Info, its geographic information system (GIS) product, available for the Windows NT environment. ESRI is beta-testing the product, which provides graphics and other functions for GIS. The company said the NT option will allow users to support GIS functions on their desktops. The product will also support Digital Equipment Corp.'s Alpha systems.

Year 2000, Take 1 . . .

Micro Focus, Inc. in Palo Alto, Calif., has begun shipping Micro Focus Revolve Year 2000 Add-On, a software package that was designed to provide analysis and changes required for companies to meet year 2000 date-change compliance with their programs. The software, which includes five days of on-site support from a Micro Focus year 2000 consultant, costs $46,500.

. . . and Take 2

Software AG in Germany has announced Insight 2000, a strategy for the year 2000 date-change issue. Insight 2000 uses a three-step methodology to address the major phases in resolving the year 2000 issue: inventory, analysis and remediation. Insight 2000 projects, already being used by Software AG's customer base, will be introduced in July through a nine-city nationwide seminar series. Prices for Insight 2000 impact assessment start at $10,000.

Tool for Red Brick

A graphical monitoring and management tool will be made to work with Red Brick Warehouse, the data warehouse-oriented relational database management system from **Red Brick Systems, Inc.** in Los Gatos, Calif. Called Patrol for Red Brick Warehouse, the tool from **BMC Software, Inc.** in Houston will sell for $6,500 and is set to ship by Aug. 1. BMC said Patrol, which is based on agent technology, detects and issues alerts on data, applications, hardware and middleware from a centralized console. It runs under Unix or Windows NT.

SQL tool bows

Version 3.1 of SimbaEngine from Seattle's **Simba Technologies, Inc.** supports stored procedures and views, includes a tester to verify the correctness of SQL data and lets users access up to 5,000 columns from a table in a single query. SimbaEngine is a developer's kit that lets applications access non-SQL data through Open Database Connectivity. It costs $6,995 on desktops and $12,500 on Unix and Windows NT.

LANtastic adds Internet tools, 48

The Enterprise Network

- **Install SAP filters** – The most common form of SAP management; available on most routers
- **Install NetWare Link State Protocol** – Reduces the SAP load
- **Adjust the router configuration** – Most routers support options such as "SAP on Change" or "SAP every x minutes"
- **Install NetWare/IP** – Removes the Novell proprietary IPX protocol completely and replaces SAP protocol and routing information protocol with distributed fault-tolerant database

Workarounds to help avoid sluggish nets

By Laura DiDio

Although Novell, Inc. has done a lot of work to minimize network slowdowns and server crashes, large NetWare shops that haven't kept up with the latest releases can still experience these problems as a result of excessive SAP broadcasts.

That is what happened to one East Coast Fortune 500 firm that has more than 10,000 users and network devices. "The SAP traffic crippled our network during peak usage hours even though we had filters installed on our Cisco high-end routers. Network operations just ground to a halt," said the MIS manager, who requested anonymity.

NetWare uses the Service Advertising Protocol (SAP) to broadcast information about available services on the network to other network devices. The NetWare file server, for instance, sends out SAP messages every 60 seconds to update other network devices such as printers and peripherals about the status of the available file server services, explained William Donahoo, Novell's director of product marketing.

Network slowdowns

The East Coast user isn't alone in his SAP broadcast problems. About 60% of all NetWare installations still use the older NetWare 3.x software, said Lee Doyle, an analyst at International Data Corp. in Framingham, Mass. NetWare 3.x doesn't automatically implement the NetWare Link Services Protocol (NLSP), which eliminates the problems of excessive SAP packets being broadcast across the wide area.

But there is good news for large NetWare shops whose network operations have suffered from too much SAP traffic. Novell technical support engi-

Workarounds, *page 49*

Some Exchange users get poor Internet link

By Tim Ouellette

Some users of Microsoft Corp.'s Exchange Server are getting a bad connection to the Internet.

At issue is the Internet Mail Connector (IMC), an Exchange service that processes Internet electronic mail with Exchange user accounts. It seems the latest version of Windows NT 4.0, Beta 2, brings the IMC to its knees. The bug prompted a flurry of comments on Exchange Internet support newsgroups in the past few weeks.

Exchange and the IMC run on the Windows NT Server platform. The IMC links Exchange to Simple Mail Transfer Protocol (SMTP) host servers on the Internet.

Also, several users purchased the IMC thinking it would support Exchange Server dial-up connections to the Internet service provider for Internet E-mail. Instead, Exchange currently supports only continuous connections to the Internet.

Microsoft is addressing both issues as quickly as possible, especially because Exchange is an important part of BackOffice, its showcase suite of enterprise applications for Windows NT Server.

When users try the new Windows NT 4.0 beta release with Exchange, the IMC becomes unreliable in sending and receiving Internet mail.

"We are having some serious difficulties. It looks like the Beta 2 [of NT 4.0] has broken the IMC," said a programmer at a Southern manufacturing firm who didn't want to be identified. The IMC ran fine with the Beta 1 version of Windows NT 4.0, he said, but he couldn't move back to the earlier version or even NT 3.51 because now other pieces of software on the network require NT 4.0 Beta 2 to run properly.

"Can anyone shed some light on this problem? Please reply to the newsgroup instead of directly to me, since my incoming mail is unreliable," posted a user on the Exchange Connectivity newsgroup.

The bug could be in either the IMC or NT 4.0 Beta 2 because workaround code in the IMC may have been negated by the most recent NT beta release, said Greg Lobdell, Exchange program manager at Microsoft.

"The problem [with NT 4.0 Beta 2] is fixed internally at Microsoft and will be part of the Service Pack 2 for Exchange," which is due next week, he added.

But other users said Exchange was supposedly designed with NT 4.0 in mind, so bugs between the two programs shouldn't happen.

At the same time, Microsoft is working to give users the option to have the Exchange Server use dial-up access to SMTP hosts to download Internet E-mail.

Dial-up support will be added to a maintenance version of Exchange due in July, Lobdell said. Now users require various workarounds to get the same result.

Bugging Exchange users

Exchange users running the IMC are encountering a couple of problems . . .

- **Windows NT 4.0, Beta 2 renders the IMC inoperable**
- **Users expecting IMC dial-up support won't get it**

. . . but Microsoft is making amends with the following:

- **Exchange Service Pack 2, downloadable from the Exchange Web site, will fix the problems with Windows 4.0, Beta 2 and the IMC. Service Pack 2 will be available the week of July 8.**
- **Dial-up support will be added to an Exchange 4.a maintenance release due in early July**

DEC maps out ATM path

By Bob Wallace

Digital Equipment Corp. is giving users a road map for gradually migrating from widely deployed router-based networks to networks based on high-speed Asynchronous Transfer Mode (ATM) switches.

The new product package was designed to cash in on a slowly emerging but significant trend among users — the move from routers, which Digital and other vendors

Digital, *page 49*

New components for the Gigaswitch ATM

Product	Starting price	Availability
Four-port fiber card	$5,700	July
622Mb bit/sec. fiber card	$14,050	August
Five-slot Gigaswitch/ATM chassis	$5,250	September

Remember when you got up in the morning and felt like you could conquer the world?

The feeling's back.

Vanquishing hordes of imaginary foes is no easy task.

Neither is managing a network computing environment with multiple platforms and thousands of desktops and servers around the world.

But the fact is, the tougher the challenge, the more thrilling success can be. Which explains why people relying on Tivoli management solutions are some of the happiest people in the business.

Tivoli's TME 10™ solution makes it possible to bring order and control to virtually any computing environment. It's the only management solution that's truly open, highly scalable and operates transparently across all the major platforms (including the industry's leading versions of UNIX,® Windows,® Windows NT,™ NetWare,® OS/2,® OS/400® and MVS.™)

And now, with the worldwide resources of IBM behind us, we provide unmatched service and support wherever your company does business.

Call us to find out how we can help you manage your network computing environment. After all, you're playing in the real world now.

1 800 965-8548

www.tivoli.com

Tivoli

Managing Network Computing. *The Smart Way.*™

CallWare gives 'net gain to voice mail

Will allow long-distance savings, remote access to messages

By Kim Girard

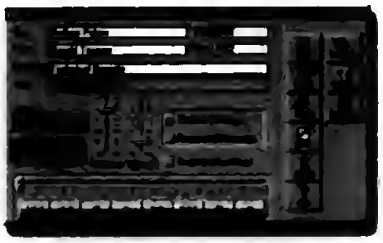
Companies that use CallWare Technology, Inc.'s voice- and call-processing systems will sooo be able to duck some long-distance charges by sending voice messages over the Internet.

The Salt Lake City-based company this week will release beta versions of CallWare Version 5.2, which creates network connections between two voice-mail systems. The updated version is integrated with Cheyenne Software, Inc.'s Faxserve and Novell, Inc.'s GroupWise, linking three types of messages oo one system.

Chris Thompson, principal telecommunications analyst at Dataquest in San Jose, Calif., questioned the need to send voice messages over the Internet.

"Messaging around the Internet is nice, but there's no compelling reason to do that," Thompson said. "What you're doing is moving dollars from ooe area to another."

But CallWare's new release dovetails with its receoi marketing partnership with Mitel Corp., the Kanata, Ontario-based telecommunications equipment supplier. Mitel has outfitted its private branch exchanges with Asynchronoua Transfer Mode capability that allows users to access voice messages and electronic mail from the same backbone.



CallWare's voice messaging interface *is similar to an answering machine*

Charl Myburgh, MIS administrator at Swire Properties in Miami, said he looka forward to upgrading to the oew version, which he said will be more tightly integrated with GroupWise.

With CallWare, voice-mail messages are posted oo the user's screen with the caller's name, telephone number and time of call and can be accessed remotely at any time and stored on the PC. To listen to the message, the user points, clicks and picks up the phone. No apecial speakers are needed.

Mike Bailey, chief of electrical engineering and design at Henry Filters, Inc. in Bowling Green, Ohio, a CallWare user for the past two years, said he wants a copy of 5.2 as soon as possible.

Bailey said he is particularly pleased that the company is improving the CallWare ViewPoint user interface, which is "in its infancy stage as a Windows program."

An increasing oumber of computer/telephone integration specifications, such as Microsoft Corp.'s Telephony API and Novell's Telephony Services API, are making computer/telephone integration much more affordable and easy to use, analysts said.

"CallWare is one of the first companies to make [these applications] marketable," though it isn't the only company working on them, Thompsoo said.

OS/2 Warp upgrade to include Notes electronic-mail client

By Tim Ouellette

Users who best-test Merlin, IBM's upgrade to the OS/2 Warp operating system, have a built-in way to send their comments to Big Blue.

Merlin will include the Notes 4.0 Mail client, giving users electronic-mail access out of the box. The operating system is now in beta testing with 10,000 users, developers and IBM channel partners.

"The really hnt thing for us is that Notes Mail mimics a word processor," said Jess Hurwitz, vice president at Parallel Storage Solutions, Inc. in Westchester, N.Y. "The closer E-mail starts to feel to what users are already familiar with, the more they will use it."

The move mirrors Microsoft Corp.'s inclusion of an E-mail client, Exchange Inbox, in Windows 95 last year. OS/2 hasn't had a built-in E-mail client.

Notes Mail is the E-mail piece of Lotus Notes 4.0, groupware from IBM's subsidiary, Lotus Development Corp.

With the Notes Mail client, OS/2 users can do the following:

- Get direct access to Internet E-mail servers and Notes Mail servers.
- Dictate E-mail with OS/2's VoiceType speech technology.
- Restrict the ability of those receiving E-mail to forward messages.

CA, Cheyenne team up

By Sari Kalin
NEW YORK

Computer Associates Ioternational, Inc. and Cheyenne Software, Inc. have teamed up to improve storage management in CA's forthcoming systems management software, officials said.

CA will incorporate Cheyenne's Intelligent Application Agent technology — software that allows users to back up applications while they are in use — into its CA-Unicenter/The Next Generation (TNG) systems management product.

Systems management

Cheyenne will also develop a version of its ARCserve network backup software for CA-Unicenter/TNG, which will enable the software to back up desktops and NetWare servers in addition to larger systems, officials said.

Even without the addition of Cheyenne's application agent technology, CA-Unicenter/TNG would have been able to identify whether a storage system was up or down, said Charles Wang, CA's chairman and CEO. But it wouldn't have been able to take a "business process view" of the storage system across applications and systems.

The companies have also developed the Business Object Storage Specification, a storage-specific extension of the object model and application programming interfaces in CA-Unicenter/TNG's software development kit. That will enable other companies to develop products that take advantage of CA-Unicenter/TNG's storage management capabilities.

This isn't the first partnership between the two companies. Last year, CA incorporated Cheyenne's RAID fault-tolerant and image backup capability into Unicenter.

CA-Unicenter/TNG is io beta testing and ia expected to be released at CA World in August. The joint offerings should be released by the end of the year, Wang said, with beta-test versions available at CA World. Pricing information wasn't yet available.

Kalin writes for the IDG News Service in Boston.

Artisoft adds Internet features in LANtastic network OS upgrade

By Laura DiDio

Artisoft, Inc. in Tucson, Ariz., recently released a version of its LANtastic peer-to-peer oetwork operating system, which includes integrated Internet access capabilities.

LANtastic 7.0, like prior versions of the software, was specifically designed for small and growing businesses. LANtastic 7.0 lets oetwork users simultaneously share a single modem, phone and Internet connection.

That results in lower Internet service provider costs "that can range from 10% to as much as 50%, depending on how many users are accessing the Internet and how mucb time they spend Web surfing," said Eric Hindin, an analyst at The Yankee Group, a Boston consultancy.

LANtastic 7.0 incorporates Netscape Communications Corp.'s Navigator 2.0 Internet browser, CompuServe, Inc.'s Sprynet Internet access service, native TCP/IP support and a Winsock gateway for Internet connection sharing. The product also has built-in modem- and phone-line sharing among all PCs on a network. That obviates the need to add dedicated lines for each user or workgroup, Hindin said.

Features of LANtastic 7.0 include:

- Modem sharing for simultaneous 'net access by all users
- Support for Windows 95, Windows and DOS
- Integrated Netscape Navigator 2.0 Internet browser
- Integrated TCP/IP support
- Price ranges from $119 for one user to $999 for an unlimited site license

"Purchasing all of the connectivity features in LANtastic 7.0 individually would cost thousands of dollars. Artisoft is giving us all these integrated features at a price small businesses can afford," said Werner Gertje, an early LANtastic 7.0 beta user and vice president of technical services at LanPro Business Solutions, Inc. in Natick, Mass.

The latest version of LANtastic also features enhanced speed, improved memory handling and expanded communications facilities. And it includes built-in support for Windows 95, Windows and DOS.

LANtastic 7.0 is available now. Prices are $119 for a single user, $499 for two to 10 users and $999 for an unlimited site license.

Users can also elect to buy bundled versions of the LANtastic 7.0 network operating system, which include the software, two network interface cards, cable and connectors. A two-user starter kit is $349.

NetWare, Notes books

Authentication Systems for Secure Networks by Rolf Oppliger; Artech House, Norwood, Mass.; 162 pages; $59; hardcover.

It is unusual in the extreme to see a cartoon on the cover of a book about the sober and arcane art of network security, especially a cartoon with a really bad computer-geeky visual pun.

But a little ironic humor is perhaps to be expected from a book the author says grew out of his frustrating attempt to compare a series of security approaches that share the same goal but almost nothing else, including terminology.

The result is a definition and comparison of the most prominent authentication and key distribution approaches that was designed for readers familiar with networking and who have at least a passing knowledge of security protocols and procedures.

It ends with a pessimistic evaluation of security on the Internet, the development of which Oppliger compares to the evolution of human society. The Internet has entered its Middle Ages, Oppliger contends, which, perhaps, explains the cover art.

The Lotus Notes & CC:Mail Guide; Affinity Publishing, Seattle; 365 pages; $2.50; paperback.

This is the official Lotus Development Corp. index to products and services for users of its Notes groupware and CC:Mail electronic-mail products. The first 30 pages or so contain product information and marketing material of marginal usefulness, but the rest of the book is a decent Yellow Pages-type listing of Notes resellers, integrators and developers broken out by region and by specialty. Extensive indexes cross-reference Notes developers and services to let readers search for a particular function or for help from resellers who specialize in particular industries.

NetWare Migration: Methods, Tools, and Techniques for Migrating to NetWare 4 by Richard A. Hanley; John Wiley & Sons, Inc., New York; 511 pages; $34.95; paperback.

The first chapter of this down-to-brass-tacks guide does give some good reasons to migrate to NetWare 4 from earlier versions of the leading network operating system, but it is mainly preaching to the converted. It is aimed at network managers who will do the hands-on work of the migration and the information systems managers they work for.

It starts by defining the differences between NetWare 3 and NetWare 4 and demonstrating why migrating is more than a casual upgrade.

It maps a specific migration plan and discusses at length the nature of the directory that is the heart of NetWare 4 and issues users need to deal with in planning their own directory structure and implementation. — *Kevin Fogarty*

Digital

CONTINUED FROM PAGE 45

claim are capacity- and performance-challenged, to powerful high-end ATM switches.

The technology built in to Digital Gigaswitches is called Internet Protocol (IP) switching and lets users support ATM switching and routing in one box, without the need for stand-alone routers.

The package, Gigaswitch/IP Solution, has all the pieces needed to gradually introduce IP switching into an existing network without forklift upgrades (see chart).

The package supports only ATM switching, but users will be able to tie Ethernet, Fast Ethernet and Fiber Distributed Data Interface (FDDI) LANs to the Gigaswitch/ATM with IP switching using stand-alone gateway devices.

Users who have consolidated servers linked to an ATM backbone stand to gain from IP switching, analysts said.

Digital's Gigaswitch/IP Solution

[illegible]	• Five-slot Gigaswitch/ATM with software • Gigaswitch/IP Switch Controller with ATM adapter • One four-port line card for multimode fiber • Three IP Switch Gateways each with a Fast Ethernet and ATM adapter • Gigaswitch/IP management application
[illegible]	$59,000
[illegible]	September

"IP switching will work well in cases where users are logged on to the servers for data-intensive applications for long periods of time," said Melinda LeBaron, research director of network computing at Gartner Group, Inc. in Stamford, Conn. "The applications must be like Lotus Notes — not E-mail — in that they require a lot of data transfer."

Picture this

That's exactly the scenario that Jim Hutchinson is pondering.

Children's Hospital in Boston has already moved to a switched FDDI backbone network — which provides dedicated 100M bit/sec. pipes — to support heavily used clinical applications.

"We've centralized servers on this backbone and are looking closely at moving to ATM at 622M bit/sec. to support existing medical imaging applications with an eye toward video-based applications," said Hutchinson, a senior network analyst at the hospital. "IP switching would give us a performance boost."

Hutchinson said he won't use Digital's IP switching until Digital builds all the package components into its Gigaswitch/ATM.

Digital is the first of the top-tier switching vendors — Cabletron Systems, Inc., 3Com Corp., Cisco Systems, Inc. and Bay Networks, Inc. — to offer an IP switching package, analysts said.

But Digital isn't running uncontested. General DataCom Industries, Inc. last week announced it will license the Ipsilon Networks, Inc. technology, which Digital uses, for General DataCom's ATM switches.

IP switching is promising, but a limited number of users are moving to ATM. And they are doing so to support super high-end data applications such as multimedia, videoconferencing and distance learning.

Workarounds

CONTINUED FROM PAGE 45

neers have developed some workarounds to help users avoid potential SAP problems.

Donahoo and Novell consulting engineers Carl Seaver and Gary Hein acknowledged that problems arise on wide-area Novell networks that have thousands of attached devices and users. "If the users haven't implemented some type of SAP management when they have thousands of devices on a network, SAP can consume an unnecessary portion of the link, gobbling up bandwidth," Donahoo said.

There are several available remedies: implementing SAP management via the NetWare/IP, adding filtering to routers and adding the NLSP.

The fix for the East Coast user came when the corporation replaced Novell's proprietary IPX protocol with NetWare/IP and used it in conjunction with filtering on its Cisco Systems, Inc. routers.

"If you have NLSP implemented properly, it does get rid of SAP," said Eric Hindin, an analyst at The Yankee Group, a consultancy in Boston. "But network administrators have to be diligent because if just one device — like a print server — isn't NLSP-aware, then you get can still have excessive SAP packets propagating across the network every 60 seconds for just that segment."

Donahoo and the Novell engineers said Orem, Utah-based Novell doesn't recommend that businesses deploy the SAP protocol to access network services. "Nowadays, under NetWare 4.1, discovering the network resources is done through Novell Directory Services and doesn't require SAP at all," Donahoo said.

Novell has added a Service Information Filter to NetWare 4.1 that selectively limits the size of the SAP database. It lets network administrators selectively filter the type and amount of SAP packets that are broadcast over the network, Donahoo said.

MEDICAL ALERT...

Unix "vi" Editor Linked to Premature Baldness

Stop pulling your hair out! Instead, move to Unix with the mainframe tools you already know how to use.

uni-SPF ispf-style Editor, Browse, Utilities, ... even Dialog Mgmt!

uni-XEDIT cms-style Editor with Full Macro Support

uni-REXX Portable System Control and Macro Language

wrk/grp
The Workstation Group

800-228-0255
sales@wrkgrp.com
http://www.wrkgrp.com

Go

Look at the name on the outside. Look familiar? It's a name you associate with everything from chips to communications. In fact,

ahead.

it's the name you see inside most quality computers. And in these particular computers and servers, you'll also find the advantage

Judge

of PowerPC™ technology. Plus the service and support you'd expect from a global corporation. Visit http://www.mot.com/computer/

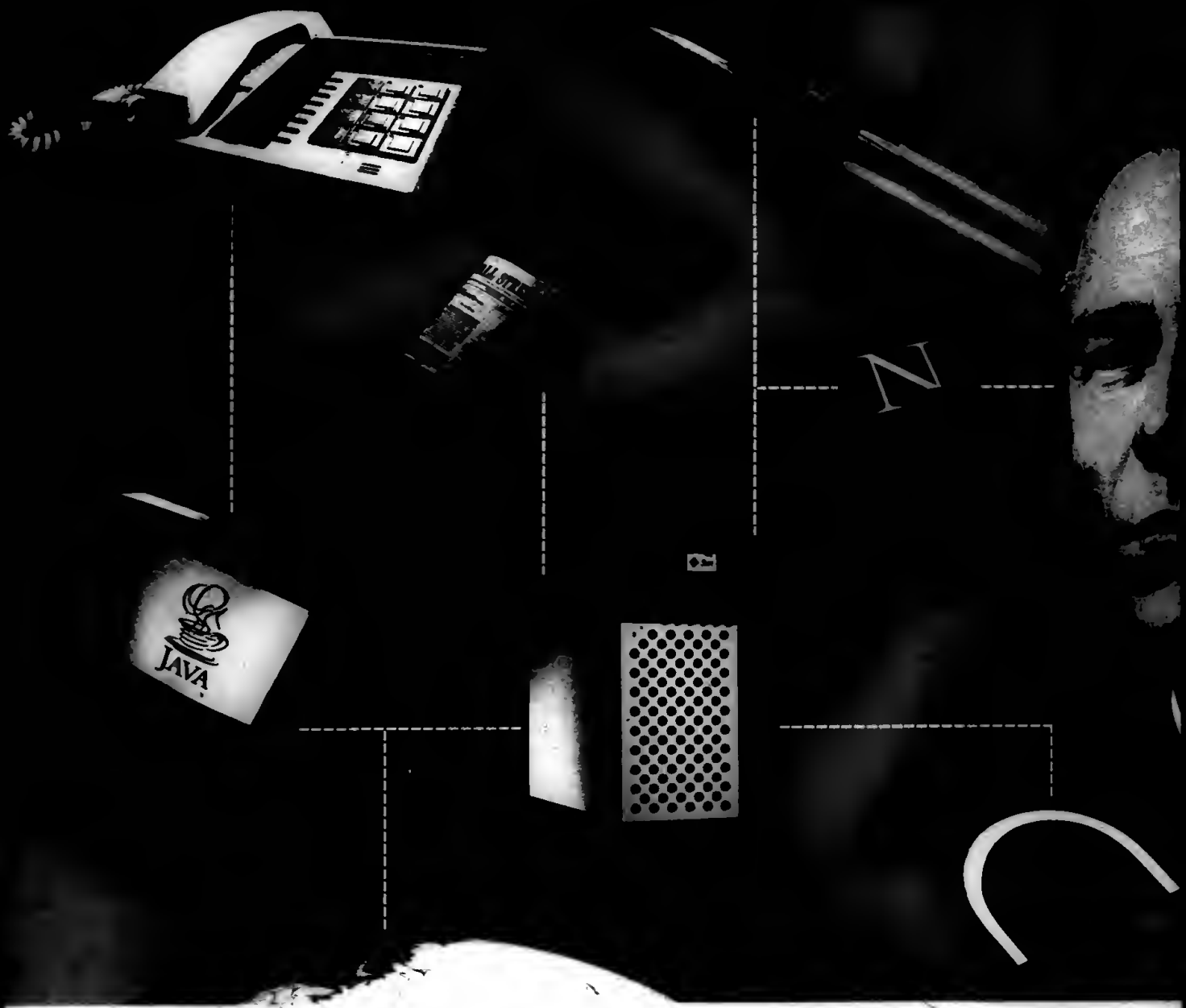
it by its

or call your nearest reseller to find out more. Or call 1-800-759-1107, ext. PCW and ask us. After all, we know them inside and out.

cover.

MOTOROLA
Computer Group

What you never thought possible.™



Instant intranet. Just add Netra.

First it was the Internet, now it's the intranet. And everyone wants it built yesterday. You could try to throw together a bunch of hardware and software into a stopgap solution, or you could just unpack a Netra™—the servers built specifically for the intranet. Pre-configured with Cofe™3.0 software to take advantage of the best Internet technology, Netra servers are the ideal foundation on which to run all your critical business applications. They outperform the competition and give you power to spare on even the most demanding sites. Solstice™ FireWall-First!™ security software and the Java™ Developers Kit make sure you're safe and ahead of the curve. And with Netscape™ Enterprise Server Software built in, it's little wonder Netra is the choice of intranet professionals everywhere. Perhaps that's why PC Magazine and LAN Magazine have piled on the awards. But then what else would you expect? After all, we're the intranet experts. To learn more about what Netra servers can do for you, contact http://www.sun.com or 1-800-786-0785, Ext. 385. **THE NETWORK IS THE COMPUTER**™

Sun microsystems

©1996 SUN MICROSYSTEMS, INC. ALL RIGHTS RESERVED. SUN, SUN MICROSYSTEMS, THE SUN LOGO, NETRA, SOLSTICE, JAVA, AND THE NETWORK IS THE COMPUTER ARE TRADEMARKS OR REGISTERED TRADEMARKS OF SUN MICROSYSTEMS, INC. IN THE UNITED STATES AND OTHER COUNTRIES. FIREWALL-FIRST! IS A TRADEMARK OF CHECKPOINT SOFTWARE TECHNOLOGIES LTD. USED UNDER LICENSE BY SUNSOFT, INC. NETSCAPE AND THE NETSCAPE LOGO ARE TRADEMARKS OR REGISTERED TRADEMARKS OF NETSCAPE COMMUNICATIONS CORPORATION. ALL TRADEMARKS ARE PROPERTY OF THEIR RESPECTIVE OWNERS.

All the news that's fit to download, 54

The Internet

IS faces 'net access choices

By Bob Francis

Where should you put that Internet server? And how about those Internet clients?

Those questions gnaw at information systems managers as they begin to purchase, deploy and maintain corporate Internet and intranet access devices.

Until now, most Internet systems were Unix servers transferred from LAN and WAN duty to World Wide Web service. But that is changing as PC-based servers and desktop systems hit the 'net and network computers, or Internet devices, begin to proliferate. Those systems promise cost reductions while increasing the flexibility of Internet and intranet applications.

The choices include the following:

- Internet devices, with prices that start at about $500.
- PC servers with built-in Web access; prices start at $2,500.
- Desktop systems with communications functions; they cost $1,000.

In reality, many large companies are likely to deploy all three options to meet differing user needs as the Internet becomes a reliable means of doing business, said Steve Auditore, an analyst at Zona Research, Inc., a research firm in Redwood City, Calif.

Network computers are basically diskless workstations that attach to Internet servers and download information and applications from the Internet. Several major companies, including IBM, Apple Computer, Inc. and Oracle Corp., have developed a standard of sorts for the devices that defines basic features and functions. So far, only a handful of companies ship network computers: Wyse Technology, Inc. in San Jose, Calif.; HDS Systems, Inc. in King of Prussia, Pa.; and JCC USA in Palo Alto, Calif.

The basic network computer has a screen, a pointing device, audio and support for an Internet Protocol. That starting price of about $500 is for a system with a monochrome screen. The advantage of network computers is that they attach quickly and inexpensively to a server. And though few network computers have been deployed, analysts estimate their support will cost less than support for PCs. According to a study by Zona Research, the cost of a network computer-based Internet installation is 57% less than that of a system built around standard desktop PCs.

And some users said managing those systems is easier than managing PCs.

"We replaced our Internet PCs with terminals two weeks ago," said Ed Dormandy, general manager at @Cafe, an Internet cafe in New York. "We were basically able to set these up, attach them to the server, and we were off."

Dormandy said that beyond the initial cost of the network computers, savings have come from ease of installation. "With the PCs, there was a lot of local installation [and configuration]. With the terminals, we hooked them up, and they booted right up," he said.

But most IS managers have user commitments that last longer than a coffee break, and they don't have users who pay their bill and then leave, rarely demanding support.

For those corporate users, the PC may indeed be the Internet device of choice. "In many ways, it makes perfect sense to use something you already have on your desktops," said Andy Shih, support network manager at Ontario Hydroelectric Corp. in Toronto.

Ontario Hydroelectric plans to continue using its Hewlett-Packard Co. Unix servers for its Internet applications, including communicating with remote sites. But it will use PCs for a variety of upcoming Internet projects, Shih said.

Many standard PC applications are gaining Internet capabilities. IBM recently added Internet capabilities to Notes, letting information pass from the 'net directly to a Notes application.

'net-ready

At General Motors Corp. in Detroit, a dealer information network tied to 8,500 PC servers is going up without internet capabilities. "But we've already planned to add Internet functions when they become part of the applications we're using," said Marvin Kay, GM's manager of dealer information management.

The availability of 'net software and functionality on PC servers is becoming commonplace. Compaq Computer Corp. in Houston, for instance, now loads Internet software on its entire line of servers. Compaq also has purchased an interest in Raptor Systems, Inc., an internet firewall company in Waltham, Mass. Other server vendors are likely to follow a similar path. And more focused solutions — Internet commerce servers, for instance — are due shortly. International Data Corp. in Framingham, Mass., estimates that PC Internet server shipments will increase to 90,000 next year, up from 32,000 this year.

"A server makes a lot of sense as a point of departure for the Internet because access to it can be controlled, and you've usually got a good data path to the server," Shih said.

Closer Look

Desktop hardware and servers

Internet platforms move onto the PC turf

	Network computers	Desktop PC	PC server
Advantages	Inexpensive (less than $1,000); dedicated functions	Flexible; already on desktop	Security; flexibility; less expensive than Unix
Disadvantages	No local storage; dependent on server; limited functionality	Manageability; cost	Reliability and manageability less than Unix

Some Java with your java?

Just around the corner from McSorley's, a New York drinking establishment that epitomizes the phrase "neighborhood bar," sits @Cafe, a postmodern coffeehouse that serves up coffee, conversation and 'net access.

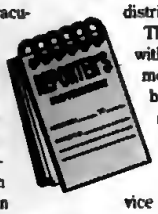
@Cafe, which charges $5 for access to the Internet, installed 16 Internet terminals three weeks ago, general manager Ed Dormandy said. He cites the ease of installation as the primary reason for replacing desktop PCs with the Winterm network computer devices from Wyse Technology. "If we want to add terminals — say, if a company wants to hold a meeting here — we can do it quickly with very little setup," Dormandy said.

@Cafe is hardly the kind of place that coffeehouse scribe Jack Kerouac would have found inviting. But perhaps if he were alive today he would write *On the 'net* rather than *On the Road*. — *Bob Francis*

Providing all the news that's fit to download

By Kim S. Nash

Extra, extra! Read all about it. Customized news feeders that spew internal company newsletters, memos and financials to corporate intranet users are popping up faster than vacuous smiles on the faces of nightly newscasters.



PointCast, Inc. in Cupertino, Calif., kicked off the parade in April, when it unveiled its $995 PointCast I-Server. **WavePhore, Inc.** in Tempe, Ariz., joined in last week with TopicNewscast, a service that offers news feeds from 400 electronic news sources. Information systems managers can automatically sort the material by predefined topics and download it to internal relational databases for corporate use.

Minibroadcasts

"The whole idea of creating minibroadcast stations for your company is something we've been wanting to do for a while," said an IS executive at an East Coast telephone company who asked not to be named.

The products let IS bring information to users in a convenient form, he said, "which is what IS is all about."

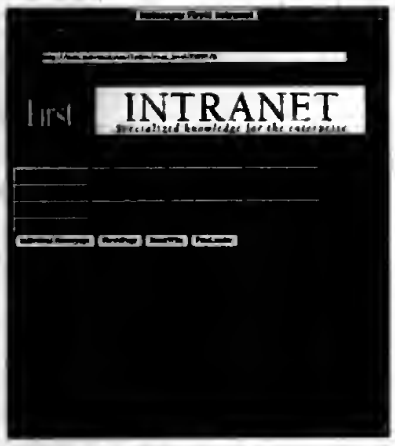
But such services may be ahead of their time, said Aron Dutta, a consultant at Booz Allen & Hamilton, Inc. in New York. Intranets are so new that many users and IS people don't have a clear idea about what information is useful to distribute, Dutta said.

The trick is to "talk with large user segments before you start broadcasting corporate junk mail," he said.

WavePhore's subscription service was designed to let users wield World Wide Web browsers to scan and print items stored on an intranet server. Pricing hasn't been set but will vary depending on which and how many of the 400 news feeds users order from WavePhore. A subscription to Dow Jones & Co.'s news service, for example, is likely to cost more than one to The Associated Press, a WavePhore spokesman said.

Meanwhile, **Individual, Inc.** recently announced a server that lets intranet users receive custom corporate news feeds, memos and other company information at their desktops. First! Intranet Release 2.0 is a reworked offering of Individual's personal news service product, with intranet-specific features and new pricing.

Unlike WavePhore's service, which can save material to intranet servers, Notes servers and other groupware products, First stores its information only on Web servers from Netscape Communications Corp. and on freeware servers, including Apache and servers from the National Computer Security Association.



Individual's First! Intranet Release 2.0 *provides intranet users with internal information such as company newsletters, memos and financials*

But Individual in Burlington, Mass., has built more customizable features in to its product. For example, First lets IS workers set up a message of the day, which assures that users are alerted to corporate communiques.

Companies with 200 users or more would pay $250 per user

Anyware Server	Central connection	$4,995 per server
WebData Gateway	Connects to databases	$195 per concurrent user
WebRealTime Gateway	Connects to real-time data sources	$995 per concurrent user
WebSheet	Spreadsheet add-on for browsers	$295 per concurrent user
Innovators Workbench	Tool set for adding additional information sources	$2,495 per concurrent user

Applix suite delivers real-time information

By Mitch Wagner

Applix, Inc. last week launched a software suite designed to let developers deliver real-time financial, news and manufacturing information through corporate intranets.

The software rides a wave of products designed to put real-time information from a variety of sources on corporate networks.

Intranets

Spreadsheet format

The Applix Anyware tool set lets developers deliver information to World Wide Web browsers from corporate databases and other information sources. The software includes a spreadsheet add-on for Web browsers, designed to let executives view the information in a familiar format.

"I think this is the next logical step in intranets," said beta user Thomas Kitrick, vice president of emerging technology applications at First Union Capital Markets Group in Charlotte, N.C. "We can [use] spreadsheets to provide real-time financial information for accounting types and investment bankers."

Applix Anyware will appeal to the large installed base of Applix users, many of whom are at financial institutions, said analyst Ezra Gottheil at Hurwitz Group, Inc. in Newton, Mass.

"For the application development world, it's more friendly, with familiar tools like spreadsheets," Gottheil said.

But the reliance on Applix's proprietary tool set, rather than a more open tool set such as Visual Basic or server-side Java, could make the software less popular with users, Gottheil said. Likewise, the fact that it runs only on Unix could make Applix Anyware a reject for users who run other servers.

With Applix Anyware, information systems managers in a manufacturing company, for example, might build an intranet application to display real-time information on manufacturing processes, warehouse inventories, sales, headline news and stock market quotes. All the information would be displayed in a Java-enabled Web browser.

Central to the tool set is the Anyware server software. Costing $4,995 each, the server runs in conjunction with a Web server to deliver data from back-end sources into the corporate intranet.

Other add-ons convert data from SQL databases, news feeds and manufacturing process control applications to Web format. A tool kit is also available that will let IS managers customize data sources and feeds.

Unix now, NT soon

The server tools run on common Unix platforms and will be available for Windows NT early next year.

Applix Anyware is on the leading edge in its ability to bring together information from a broad range of non-Internet sources and put it in one Web browser that uses a common tool set.

But other companies provide similar products. Database connectivity to the Internet is fairly common, and Wayfarer Communications Corp. and WebMate Technologies, Inc. offer the ability to adapt to the Internet standard client/server applications written in Visual Basic and other languages.

Briefs

'net gateway for NetWare

Performance Technology, Inc. upgraded its LAN-to-Internet gateway to help managers of Novell, Inc. NetWare-based LANs connect and administer their users. Version 3.1 of Instant Internet from the San Antonio subsidiary of Bay Networks, Inc. connects between a LAN hub and a telephone line or router without adding or changing any server. It supports up to 50 users without requiring TCP/IP on the LAN or multiple Internet service accounts. Pricing starts at $3,495.

HP streamlines OpenView for OEMs

Hewlett-Packard Co. has released a version of its Windows-based LAN management software for developers and OEMs. Version 7.2C of HP OpenView for Windows Professional ships in just five forms, down from 12. Prices vary by number of nodes supported and inclusion of tools such as file transfer protocol and management protocols. HP is seeking to improve the consistency and reliability of future releases and to prepare for a Windows NT version due late this year.

Banyan gets personal

Banyan Systems, Inc. added a consumer-oriented Internet electronic-mail offering to its line of BeyondMail products. BeyondMail Personal Internet Edition offers low-cost E-mail with some business features. Those include WebMinders to automatically retrieve World Wide Web pages and MailMinders to perform rules-based filtering of mail messages. Trial versions are available at www.coordinate.com.

QUAD *Pentium Pro* 200/512

Pentium Pro multiprocessing. Another first.

The company that defined the state-of-the-art in quad processing Pentium technology now takes the server world to the next level. Introducing the **ALR Revolution Quad6**, the first server to offer the power of four 166- or 200-MHz **Pentium Pro** chips. With its advanced processing, integrated hardware management features, and unequalled expandability, this amazing system is re-defining the PC server's role in today's business world.

intel inside PENTIUM PRO PROCESSOR

TEST CENTER INFO WORLD BEST BUY

Equipped with ALR's Quick Hot Swap option, the Revolution Quad6 supports over 28-GB of hot-swappable RAID5 data storage.

Engineered specifically for 32 bit, SMP capable operating systems such as Windows® NT, Netware® SMP and SCO® UNIX, the ALR Revolution Quad6 offers superior server technology for transaction processing, inventory management, database queries, and other enterprise-wide applications. It supports four-way memory interleaving, giving this system a data bandwidth that rivals costly, proprietary, mini and mainframe computer technology. Combine this wide data path with up to 2-GB of RAM, and you have the ideal solution for any business that needs to gather, analyze, and access massive amounts of data. And with its large, double-wide chassis, integrated security features, and available fault tolerant storage options, the Revolution Quad6 is also an ideal place to store this data.

With fifteen available expansion slots, including 8 PCI slots, the Revolution Quad6 offers superior flexibility.

InforManager

Safe-guarding all this hardware is ALR's new integrated Server Hardware Management system. Utilizing an array of built-in sensors, ALR InforManager monitors key environmental data such as processor temperature, fan operation, system voltage, and chassis security. This up-to-the-minute data is then relayed to a touch-screen LCD control panel, so operators can correct system problems before they lead to costly server downtime and component damage.

warranty

It's yet another example of the attention to detail and superior quality that is built into every ALR server. Quality that's backed by a industry leading warranty that will take you right into the next century.

The time for waiting is over. Superior server technology is here. To order your ALR Revolution Quad6, or for more in-depth information, contact your local ALR reseller. Or call our toll-free number today.

1-800-444-4ALR (ref#5802)

ALR

Advanced Logic Research, Inc.

ALR is on the Internet - http://www.alr.com, CompuServe - GO ALRINC, & America Online - Keyword ALR

Advanced Logic Research, Inc. 9401 Jeronimo, Irvine, CA 92718 (714)581-6770 FAX (714) 581-9040. Prices, configurations and specifications subject to change without notice. Systems shown with optional equipment. Pricing based on U.S. dollars. ALR is a registered trademark of Advanced Logic Research, Inc. Pentium logo and intel inside logos are trademarks of Intel Corporation. All other brand and product names are trademarks or registered trademarks of their respective owners. © 1996 by ALR

Almost All Computer Companies Sell Storage.

How Come The Leader In Storage Doesn't Sell Computers?

The most competitive companies in the world have two things in common. They're organizing their entire business around their information, doing anything and everything they can to leverage it into smarter, more powerful decisions and strategies.

And they're recognizing information storage as business-critical and then treating it as a separate purchase. In other words, buying it from EMC, the world leader in high-performance storage solutions. Unlike typical computer company storage, EMC intelligent storage lets you do a lot more than just store. It consolidates all your information and keeps it online close, immediately accessible across the entire enterprise, regardless of how many different computers or servers are involved. Or how many times they change.

If you'd like to find out how EMC can help your company bring products to market sooner, respond to customers and new opportunities faster and give indispensable support to your overall growth and profit strategies, call 1-800-424-EMC2, ext 218. Or visit us at http://www.emc.com.

EMC²

Free To Do More.

EMC² and THE STORAGE ARCHITECTS are registered trademarks and EMC is a trademark of EMC Corporation. Other trademarks are the property of their respective owners.
©1996 EMC Corporation. All rights reserved.

Storage vendors plan next-generation releases, 61

Corporate Strategies

Prescription for savings

By Thomas Hoffman

Maybe the U.S. government *can* learn something from Canada's universal health care system, after all. Consider the following:

- The British Columbia Ministry of Health expects a six-month return on a $15 million integrated pharmaceutical network that should reduce labor and claims processing costs.
- Some 1,500 pharmacists can go online to review 14 months' worth of prescription histories for 2.8 million people. Within seconds, they can access this information and ensure that newly prescribed drugs won't create adverse side effects when they interact with a patient's existing prescriptions.
- Thousands of low-income residents can save hundreds of dollars in up-front pharmaceutical copayments thanks to an automated payment delivery system.

British Columbia's PharmaNet network, which IBM installed, was rolled out to more than 675 pharmacies beginning last June. The three-tier TCP/IP network links 16 different in-store pharmacy systems via a government-run wide-area network.

Prescriptions are processed through an IBM RS/6000 Unix system. Pharmacists link to the system by using a Ministry of Health application programming interface, so there are no visible changes in the front-end applications.

One of the system's biggest benefits is how the system automatically adjudicates prescriptions online for pharmacists. "From a business standpoint, [PharmaNet] lets us know when we're going to get paid by the government" for a prescription, said Naz Rayani, an independent pharmacist who owns Cadboro Bay Pharmacy in Victoria, B.C.

PharmaNet's Paul Tier: *British Columbia could save $30 million by using the online service*

Better service

Prescription claims were paper-based and processed manually. Now, with claims adjudication done online, the Ministry of Health saves the equivalent of 30 full-time jobs. More important, residents get better service. Under PharmaCare, a drug program that is similar to the U.S. Medicare system, the province covers 100% of prescription drug costs for senior citizens and others who receive social assistance.

But those who aren't covered under PharmaCare have to pay a $600 deductible toward their prescriptions each year. Previously, residents also had to pay 70% of prescription costs up front before they were reimbursed six to 10 weeks later, said Paul Tier, an independent consultant who has directed the PharmaNet project in the province for the past three years.

Under PharmaNet, low-income and other residents who aren't covered by PharmaCare still pay the $600 deductible but pay only 30% of the prescription costs up front once they have met their deductibles.

IBM officials said they still have a few kinks to work out of the network. Big Blue had originally promised five-second response times for pharmacists. They are instead seeing 15- to 20-second response times, Rayani said.

But users said compared with the previous process — where claims processing, drug interaction checks and prescription reimbursements took anywhere from 45 to 60 days — PharmaNet is a big improvement. "It makes me a better pharmacist," Rayani said.

Data begins journey to a multidimension

Companies weigh benefits, cost savings to be gained from multilevel vs. relational databases

By Sharon Gaudin

Blue Cross/Blue Shield of Rhode Island is moving more of its information into a multidimensional database, studying the information from different angles and dissecting it with different knives. The company said multidimensional data structures give its information more meaning and its business more options.

Blue Cross/Blue Shield of Rhode Island was only starting to look at the multidimensional arena four or five years ago. Today, the multidimensional database is considered an intricate part of the company's business resources.

The insurer isn't alone. A new study by The Yankee Group in Boston shows that money spent on multidimensional database products is increasing at a rate of 30% a year — twice the increase in the relational database market, according to Brian Murphy, an analyst at The Yankee Group.

"When you have a large amount of data, and you want to see it across different views, you have a lot of tables joined together [in a relational database]," says Mike Daniels, an application information services consultant at Blue Cross/Blue Shield. "When you have hundreds of thousands of rows and 15 or 20 tables joined, your access time is very slow.

"With multidimensional [structures], you can go in from the middle or the back and grab any kind of information you want to see," Daniels said. "Speed is one thing, but another more critical part is that you can show executives more critical kinds of data without jumping through so many hoops."

Source: The Yankee Group, Boston

Relational databases store information in tables that are set up with only rows and columns. Multidimensional databases structure data in more complex ways; they allow each bit of data to be described or conceptualized several ways, Murphy explained. An invoice may represent a bill to Department A, a cost to Department B and an inventory item to Department C. Multidimensional databases generally are thought to offer easier and faster access and analysis.

Relational reign

Many companies use multidimensional products, but they aren't leaving behind relational databases. Relational databases still reign supreme over multidimensional upstarts, said Herb Edelstein, president of Two Crows Corp. in Portland, Md., a data mining and warehousing analysis firm.

Edelstein said the relational database market is worth roughly $2.5 billion to $4 billion, and the multidimensional market rings in at roughly $150 million. "For something that large to be growing at half the rate of a relatively tiny market, that's good news for the relational database vendors," he said.

According to The Yankee Group study, users last year spent $190 million on multidimensional database products in server-class systems, mainly Unix. The report projected that the number would jump to $260 million this year and $650 million by 2000, Murphy said. The study didn't include desktop products, such as Cognos Corp.'s PowerPlay, or analytical tools that sit on top of relational databases.

"Funny,
I thought my
job description
said
MIS manager
not

test pilot."

HELP

Uh-oh. It's time to start designing a client/server network. All in the line of duty, of course. The trick is to do it somehow without risking your life.

The problem can be summed up in a few words. Words like "danger." And "why me?"

Wouldn't it be nice if you could see exactly how things were going to work before rocketing headlong into a sky full of question marks?

That's what we thought.

At IBM, we've spent years helping a wide variety of companies find an even wider variety of client/server solutions. Recently, we took what we've learned over those years, the accumulated wealth of knowledge, solutions, ideas, inspirations and innovations, and published them on a Lotus Notes® database.

We call it the IBM Client/Server Advisor System™, and it puts a vast reservoir of knowledge within easy reach. So whether you have to design a system for sales and marketing, human resources, manufacturing or finance, you can start from a point of knowledge and experience. Together, we can devise a solution for your business by looking at the ways in which other businesses satisfied similar needs.

Of course, simply having a solution isn't exactly the same as having a solution that works for you. So we created Open Systems Centers (there are 42 of them around the world). There, we can get more specific, design a tailored solution and test it in a real-life multivendor environment. So you'll see just how it will work in your company.

All of which means you can spend less time worrying about the risks and start focusing on the opportunities. To find out more, visit www.ibm.com or call 1 800 IBM-7080, ext. G130, for a free 16-page booklet.

Then sigh with relief.

Solutions for a small planet™ IBM

IBM, IBM Client Server Advisor System and Solutions for a small planet are trademarks of IBM Corp. Lotus Notes is a registered trademark of Lotus Devel-Cpra. © 1996 IBM Corp.

Chameleon NFS

Clearly The Leading IntraNet Desktop.

Introducing Chameleon IntraNet Desktop™ with Windows 95 and NT. The world's most complete IntraNet desktop suite.

Now any desktop PC on your IntraNet can access information anywhere—including the Internet. Chameleon IntraNet Desktop includes six integrated program groups, making it the best value you can buy—and it's available with NFS—the file system of the IntraNet.

Chameleon is based on the standards that built the Internet, so your investment is fully protected in the years to come. Chameleon IntraNet Desktop is part of the NetManage IntraNet Family—a comprehensive suite of products designed to help you build a powerful corporate IntraNet. Call now and GO! IntraNet today.

- NFS client and server for Windows 95, NT and 3.1.
- Six highly integrated product groups: **Host Access, E-Mail and Messaging, Internet Access, Group Collaboration, File and Printer Sharing, and Desktop Management**
- Access any server.
- Setup in 5 minutes.

FREE!

Visit our Web site to download software

1-408-342-7525

NETMANAGE®

WE KNOW THE NET. INSIDE AND OUT.

sales.c@netmanage.com
www.netmanage.com

© 1996 NetManage Inc., 10725 North De Anza Blvd., Cupertino, CA 95014 U.S.A. Fax. (408) 257-6405 UK: +44 1483 881800; Israel: +972 (0)4-8550234, Germany: +49 (0) 8165/9470-0; France: +33-1-47 72 08 08; Japan: +81 (0) 3-3221-8400. Specifications are subject to change without notice. All trademarks are property of their respective companies. Chameleon, GO! IntraNet and NetManage are trademarks or registered trademarks of NetManage Inc.

COMPUTERWORLD

Professional Courtesy Voucher

❑ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ❑ Home ❑ Business ❑ New ❑ Renew Basic Rate: $48 per year

*U.S. Only Canada $95. Mexico, Central/South America $150. Europe $295. all other countries $295. Foreign orders must be prepaid in U.S. dollars. For faster service, fax your order to (508) 626-2705.

SAVINGS STATEMENT

Regular Subscription Price

$48.00

Your Special Price

$39.95

Your Savings

$8.05

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government: State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distributor/Retailer
95. Other_____ (Please specify)

2. TITLE/FUNCTION (Circle one)

IS/MIS/OP MANAGEMENT
19. Chief Information Officer/Vice President/Assistant VP IS/MIS/OP Mgmt.
21. Director/Mgr. MIS Services, Info. Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D. Tech. Mgmt.
60. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Education, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❑	❑
B. 10,000 – 19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

B476 4

COMPUTERWORLD

Professional Courtesy Voucher

❑ **Yes**, I want to receive my own copy of **COMPUTERWORLD** each week. I accept your offer of $39.95* per year - a savings of $8.05 off the basic subscription price.

First Name MI Last Name

Title

Company

Address

City State Zip

Address shown: ❑ Home ❑ Business ❑ New ❑ Renew Basic Rate: $48 per year

*U.S. Only Canada $95. Mexico, Central/South America $150. Europe $295. all other countries $295. Foreign orders must be prepaid in U.S. dollars. For faster service, fax your order to (508) 626-2705

SAVINGS STATEMENT

Regular Subscription Price

$48.00

Your Special Price

$39.95

Your Savings

$8.05

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)
10. Manufacturer (other than computer)
20. Finance/Insurance/Real Estate
30. Medical/Law/Education
40. Wholesale/Retail/Trade
50. Business Service (except DP)
60. Government: State/Federal/Local
65. Communications Systems/Public Utilities/Transportation
70. Mining/Construction/Petroleum/Refining/Agriculture
80. Manufacturer of Computers, Computer-Related Systems or Peripherals
85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services
90. Computer/Peripheral Dealer/Distributor/Retailer
95. Other_____

2. TITLE/FUNCTION (Circle one)

IS/MIS/OP MANAGEMENT
19. Chief Information Officer/Vice President/Assistant VP IS/MIS/OP Mgmt.
21. Director/Mgr. MIS Services, Info. Center
22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
23. Dir./Mgr. Sys. Development, Systems Architecture
31. Programming Mgmt., Software Developers
41. Engineering, Scientific, R&D. Tech. Mgmt.
60. Sys. Integrators/VARs/Consulting Mgmt.

CORPORATE MANAGEMENT
11. President, Owner/Partner, General Mgr.
12. Vice President, Assistant VP
13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT
51. Sales & Marketing Mgmt.
70. Medical, Legal, Accounting Mgmt.

OTHER PROFESSIONAL MANAGEMENT
80. Information Centers/Libraries, Education, Journalists, Students
90. Other Titled Personnel

3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply)

Operating Systems
(a) Solaris (e) Mac OS
(b) Netware (f) Windows NT
(c) OS/2 (g) Windows
(d) Unix (h) NeXTstep

App. Dev. Products ❑ Yes ❑ No
Networking Products ❑ Yes ❑ No

4. How many people are employed at this location and in your entire organization, including all of its branches, divisions and subsidiaries? (Select only one per column.)

	1. At this location	2. Entire Organization
A. 20,000 +	❑	❑
B. 10,000 – 19,999	❑	❑
C. 5,000 – 9,999	❑	❑
D. 1,000 – 4,999	❑	❑
E. 500 – 999	❑	❑
F. 100 – 499	❑	❑
G. 50 – 99	❑	❑
H. 20 – 49	❑	❑
J. 10 – 19	❑	❑
K. 1 – 9	❑	❑

B476 4

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55B MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-4144

Multivendor storage systems come of age

By Jaikumar Vijayan

Don't look now, but things are changing in the distributed, client/server storage management arena.

Driven by the growing demand for increased backup performance, ease of configuration, central control, user-friendly interfaces and multiplatform support, many vendors are stepping up to the plate with products to ease storage administrators' lives.

In the past few months, major storage vendors such as IBM, Cheyenne Software, Inc., Legato Systems, Inc. and Interlink Computer Sciences, Inc. have begun to offer integrated, multiplatform storage management products that go well beyond simple data backup and retrieval.

These products are likely to include status monitoring tools, improved media support, disaster recovery support and enhanced central control.

As they try to be as broad-based and open as possible, many of these vendors are also linking their storage management products with systems management products from other vendors.

"There definitely is an effort to integrate storage management products into an overall enterprise storage management suite" with links to existing systems management products, said Rob Enderle, an analyst at Giga Information Group in San Jose, Calif.

This is a good trend for storage managers such as Bob Goodheart at BMW of North America, Inc. in Woodcliff Lake, N.J. Goodheart recently opted to install IBM's Adstar Distributed Storage Management product.

"The number of servers we had was growing. The diversity of platforms and the number of mission-critical applications running on them was growing," Goodheart explained. "We were absolutely looking for something with which we could manage all this centrally and robustly."

Cause and effect

According to a recent report from Gartner Group, Inc. in Stamford, Conn., relational databases, object-oriented applications, GUIs and applications such as workflow automation with imaging support are also creating massive requirements for data storage and backup.

What are the leading storage vendors planning during the next 18 months?

Vendor	Plan
IBM	Disaster recovery, Windows NT Server, hot online database backup
Cheyenne	Data archiving, hot online database backup, scalability
Open Vision	Disaster recovery, Windows NT Server, enhanced hierarchical storage management
Legato	SAP support, enhanced NetWare support
Interlink	Windows NT/Unix stand-alone server, enhanced distributed storage server

Facing challenges

Products such as IBM's Adstar Distributed Storage Manager, Cheyenne's ARCserve and Legato's Networker combine multiplatform data backup functions with different levels of centralized management, automated data archival, retrieval, policy scheduling and disaster recovery.

The up-front costs to implement some of the integrated products may be higher than individual storage products, but companies such as Legato, for instance, have begun to offer modular options and prices. That will let users add functionality as needed, analysts said.

"The challenges of storage management — that people in the mainframe world are so familiar with — are only now beginning to hit the distributed environment," said Vicki Vollmar, ADSM product marketing manager at IBM in San Jose.

To address those issues, vendors are integrating more trouble-shooting tools and capabilities in their products. Those additions include the following:

- Tools that will let administrators obtain detailed status information about multiplatform storage devices across the network from a central location.
- Graphical user interfaces (GUI) that allow tasks such as formatting and mounting of storage media from central nodes.
- Management consoles that periodically poll storage system servers to monitor system status and performance on a variety of topics, such as disk configuration, drives and controllers.

"What vendors [have to] remember, though, is to keep things simple and elegant," warned Mitch Sako, a senior systems administrator at CellNet Data Systems in Mountain View, Calif. "More things still need to be done in making all this work efficiently, as opposed to just putting in a lot of features" to make the products look impressive.

Briefs

Taxing technology

Several Florida counties are trying to assess property taxes on custom software programs that are developed by high-technology firms. The firms, which include Airbus Service Co., Lockheed Martin Missile and Space, General Electric Co. and Encore Computer Corp., are fighting back in court. The state recently failed to resolve the issue of taxing software, which could result in a charge of up to 25 cents per $1,000 of assessed value. There is no consistent method of taxing software among states. Many states opt to exempt software rather than assess something that quickly can become obsolete.

Huntington offers 'net-based banking

The Huntington National Bank has opened The Huntington Web Bank, an Internet-based banking service that will let customers access account information, pay bills electronically and interact with customer service representatives. The site, which was built using Virtual Bank Manager software from Five Paces, Inc. in Atlanta, can be accessed at www.huntington.com. The first six months of service at the Huntington Web Bank are free. After that, the service costs $5.95 per month, which includes unlimited account access and bill paying service.

HP center prepares firms for worst

Hewlett-Packard Co. has opened an end-user business recovery center in Queensferry, Scotland, for European customers who need backup computing equipment and alternative office facilities in the event of a disaster. HP already has business recovery centers in England, Germany, Sweden, Spain and France.

Genix deal goes down

Affiliated Computer Services, Inc. (ACS) in Dallas has signed a definitive agreement to acquire The Genix Group in Dearborn, Mich., a wholly owned subsidiary of MCN Corp. The deal will cost ACS $135 million in cash. Genix primarily serves the manufacturing, utility and insurance industries.

U.K. insurer turns to Unisys

Royal Insurance Life and Pensions, an England-based insurer, has outsourced maintenance of its multivendor desktop and mainframe systems to Unisys Corp.'s Global Customer Services unit under a three-year, $4 million deal. Under the agreement, Unisys will maintain Unisys and IBM mainframes; HP and IBM Unix servers; and more than 2,500 desktop machines, including systems from Apple Computer, Inc., AT&T Corp. and Dell Computer Corp.

Fed-supported virtual bank open for business

By Terho Uimonen

The world's first government-sanctioned Internet bank has signed up more than 3,000 account holders since opening its virtual vault last October. And it has yet to be broken into.

The Pineville, Ky.-based bank has more than $9 million in deposits, with about 650 new accounts being opened each month, said James Mahan, chairman of Security First Network Bank. Mahan recently addressed about 300 Taiwanese bankers and government officials.

To protect account holders' data, the bank uses a variety of security measures, including encryption and firewalls, with Hewlett-Packard Co.'s U.S. military-grade Trusted Operating System at the core of the system, Mahan said.

Although security isn't a problem, the popularity of Internet banking is still being hampered by the inherent slowness of the network, Mahan said.

But Internet banking still offers bankers an important advantage over PC-based home banking today: The ability to create individual interfaces on the Internet allows banks to decide what services they offer and when, Mahan said.

"Make sure that what your customers see on a daily basis is what you want them to see, not what someone else wants them to see," he said.

In contrast, if banks were to use applications such as Intuit, Inc.'s Quicken as their customer interface, but wanted to offer a particular service not included in Quicken, they would have to persuade Intuit to modify the software, Mahan said.

In comparison, an Internet interface offers total flexibility, including choice about partners and brokerages that a banker chooses to work with, Mahan added.

Security First's virtual lobby can be found on the World Wide Web at www.sfnb.com.

Uimonen writes for the IDG News Service, Taipei bureau.

DECISIONS ARE TOUGHER.

TIME IS **CRITICAL**.

RESOURCES ARE LEANER.

AND THE BUCK STOPS WITH **YOU**.

...HYPE JUST WON'T CUT IT ANYMORE.

Introducing

CFO Vision

THE **POWER** TO FIGURE IT OUT.

Stop crunching and start analyzing. With CFO Vision you can visualize your business interactively...and gain control of information to spot opportunities and risks faster than ever before. Reengineer the entire process of *financial consolidation, reporting, and analysis*...as you accelerate the flow of information to decision makers at every level of your organization.

With the click of a mouse:

- Understand the facts beyond the figures.
- Improve timeliness and availability of business reporting.
- Analyze every "slice" of your business—from branch profitability to product cost analysis—in any currency.

Powerful, award-winning data warehousing, OLAP, graphics, and EIS capabilities are all included in one fully integrated, easy-to-use solution. It's all yours from one vendor: SAS Institute, with a proven track record for continuous innovation and reliable support at more than 29,000 organizations worldwide...including the *Fortune 100*.

For a free preview of CFO Vision, just give us a call or send us E-mail at cw@sas.sas.com

919.677.8200 Fax 919.677.4444 In Canada 1.800.363.8397 www.sas.com/vision/

SAS

SAS is a registered trademark, and CFO Vision a trademark, of SAS Institute Inc.
Copyright © 1996 by SAS Institute Inc

HEY! LISTEN UP!!!

Hearing is one thing; listening is another. But not listening can reflect badly on you and cost your IS operation dearly.
By Alan S. Horowitz

A team involved in developing part of the Macintosh operating system was led by two people who wouldn't listen. Instead, they made those who asked questions feel stupid, says Sheila Brady, director of the Macintosh Modern OS Group at Apple Computer, Inc. in Cupertino, Calif. The result: Questions weren't asked, members didn't know what to do, and

Listen up, *page 64*

. . . and learn how to ask the right questions

"Conducting a survey is a euphemism that means, 'I'm going to try to get some information from someone who really can't be bothered to give it to me.'"

That's the trouble with surveys, says Paul Dolbec, director of information technology audit at Unum Corp. in Portland, Maine.

User surveys are valuable tools, but only if you do them well
By Kathleen Melymuka

But it doesn't have to be that way. Rather than be a dirty job that somebody has to do, an internal user survey can be a tool for ongoing, two-way communication and constructive change.

A few basic rules can help you put together a good user survey:

- Know what you want to find out.
- Keep it short.
- Design questions whose answers will suggest a course of action.
- Use both open-ended and multiple-choice questions.
- Generate interest in advance.
- Share findings with respondents.

Surveys, *page 65*

Hey! Listen up!!!

CONTINUED FROM PAGE 63

an entire project almost fell apart.

"We ended up losing probably five months — not to mention the terrible state of the team," Brady says. "It was a big catastrophe, and I attribute it to a lack of listening skills [on the part of] the technical leaders."

Listening may be the most important communications skill. In his book *Effective Listening*, Kevin J. Murphy defines listening as "the accurate perception of what is being communicated." Unlike hearing, which is passive and something we always do, listening is active and something we choose to do, Murphy writes.

The cost of poor listening can be considerable for information systems professionals. L. Paul Ouellette, CEO of Ouellette & Associates Consulting, Inc. in Bedford, N.H., estimates that poor listening adds as much as 50% to the cost of application development.

But unlike reading and writing, listening is rarely taught. This is significant for IS because projects commonly are subverted by communications problems, says Dave Carvoneau, vice president of information technology at Portland General Electric Co. in Portland, Ore. The consequence of not listening, he says, "is building the wrong solution."

That happened to David Albright, director of information services at Minnegasco, a natural gas distributor in Minneapolis. When a customer complained about a scheduling system, the IS people immediately "heard" it as a programming problem and started changing code. Wrong. "It was selective hearing," Albright says. "It wasn't a technical problem; it was a service and support problem."

Although a lack of good listening skills is common throughout organizations, IS often seems to be on its own wavelength. That's partly because IS, more than most other functions, deals with the abstract. "In the early stages of projects, we're dealing on a conceptual level. The user has a concept of what they want, and there's this delivery of a hazy concept," says Dick Brant, vice president of MIS for the U.S. at Reader's Digest Association, Inc. in Pleasantville, N.Y.

"IS people are action-oriented; they're problem solvers. That tends to leave little time for listening."
Joe Hunter, manager, information services department, Baltimore Gas & Electric

Personality characteristics can make matters worse. Whereas most people stop, hesitate and think about the options, IS folks race headlong toward their goal, like a horse galloping to the finish line. Joe Hunter, manager of the IS department at Baltimore Gas & Electric Co. in Baltimore, observes: "IS people are action-oriented; they're problem solvers. That tends to leave little time for listening."

Then there are the social skills — or lack thereof — among IS people that get in the way of listening. "Heavy-duty technical people see themselves as contributing most when they're by themselves," Brady says. As a result, "they don't spend a lot of time building their listening skills."

But not all the problems can be laid at the ears of IS people. Customer/IS communications frequently occur in less-than-ideal circumstances. "When someone's system is down, they're very upset. They don't communicate well," says C. J. Liang, organization development consultant at Apple Computer's Apple University in Cupertino.

Furthermore, users often throw around terms they barely understand. "Technical jargon is becoming more commonly used outside the technical area, so there might not be a common understanding of the terminology between the technical and nontechnical person," Brant says.

One of the best ways to improve listening skills in the IS department is to hire good listen-

Learning more about listening

BOOKS

- **How to Speak, How to Listen**
  By Mortimer J. Adler; Collier Books, 1983
- **Effective Listening**
  By Kevin J. Murphy; Bantam Books, 1987

TAPES

- CareerTrack Publications, Boulder, Colo., has a cassette tape set called **Effective Listening Skills.**
- Cambridge University sells a cassette tape set on the Internet, **Active Listening: Introducing Skills for Understanding.** www.cup.cam.ac.uk.

SEMINARS

- Boston College has a course on listening. Contact: www.bc.edu/bc_org/avp/csom/MDP/default.html.
- The Graduate School of the U.S. Dept. of Agriculture. Contact: www.graduate.gov/index.html.

WORLD WIDE WEB SITES

- The Ohio Civil Service Employees Association has a site with a list of 14 listening tips (two pages of text). Contact: www.ocsea.org/facts/listen1.html.

Six steps to better listening

- **Be aware of your biases.** We are often biased against people based on race, gender, age, physical appearance and even "trigger" words they say that rub us the wrong way.
- **Keep a glass of water on your desk,** and drink from it every time you have the urge to interrupt someone.
- To improve your concentration, **practice summarizing** television programs and newspaper articles.
- Tell yourself: **"I don't want to let my mind wander."** Actively stop yourself from looking out the window or at passersby.
- As a person speaks, **take brief notes.** This forces you to concentrate on what's being said.
- **Keep looking for information you can use** from the speaker. Even criminally dull speakers have nuggets of information worth hearing.

HEAR-ing aid

This is the HEAR model used by Ouellette & Associates Consulting in Bedford, N.H., for training IS professionals in interactive listening.

(H) Hear the person's words: Concentrate, eliminate distractions, avoid mental arguing, and check with the speaker for accuracy by paraphrasing and summarizing.

(E) Empathize: Put yourself in the speaker's position, show interest in what the person says, and work to understand the context in which the speaker operates.

(A) Analyze: Look at all relevant factors, ask open-ended questions, and walk the client through your analysis.

(R) Respond: Use language the person will understand, be specific, and make sure the person understands.

Many of us tend to jump from Hear to Respond, notes L. Paul Ouellette, CEO of Ouellette & Associates. Good listeners, he says, move through the first three stages before giving an answer.

ers. Albright says when he interviews prospects, interpersonal skills get priority over technical skills. He presents job applicants with a hypothetical situation, often based on a real-life scenario, and wants them to provide a solution that includes talking with the customer, listening to his needs and discussing alternate solutions. Those who provide purely technical solutions aren't hired.

Reflective listening — a technique in which the listener periodically paraphrases what the speaker has said — is especially effective for IS people because they frequently deal with jargon and are under severe time pressure. By reflecting back, the listener makes sure he understands the speaker correctly and sends a signal that he is paying attention.

Another technique: Avoid the urge to provide a fast solution. "I tell my supervisors that they don't have to respond immediately to an employee's question. But they should focus on what the person is saying and say they'll get back to them later," Hunter recommends. "The world is complex. Don't go for a quick response."

Finally, remind your people that they have two ears and one mouth, and they should use them proportionally. ■

Horowitz is a freelance writer in Salt Lake City.

10 habits of highly ineffective listeners

Poor listeners . . .

- Spend more time talking than listening
- Finish the sentences of others
- Daydream when others talk
- Interrupt incessantly
- Plan their response while the speaker is still speaking
- Are quick to provide advice even when not asked
- Divert conversations from what the speaker says to what interests them
- Answer questions with questions
- Are preoccupied with their own thoughts
- Consistently dominate conversations

Surveys: Ask the right questions

CONTINUED FROM PAGE 63

Starting with these rules and incorporating the wisdom of information systems managers who have been there can raise your surveys to an art form.

Above all, keep your perspective. A survey is a means to an end.

"A survey is not a short-term strategy," Dolbec says. "It has to have a long tail on it. You ask. Something takes place as a result of the response. You ask again, testing the effectiveness of the changes you just made.

"As you continue the survey strategy, the quality of your information will continually improve if you keep your respondents in the loop."

Before you start writing, ask yourself this question: To find out what you need to know, do you really need a survey?

Not everyone does.

"I don't use surveys," says Ron Ozga, director of information services at RCI Management, Inc. in Corona, Calif. "We're small enough, and we're pretty localized, so we can address things in user group meetings. It's really brainstorming."

If you can address your issues through face-to-face meetings, by all means do so.

But if you must conduct a survey, talking with experts can clarify your approach.

"We found real value in meeting with a few survey vendors," says Doug Whittle, client services manager at Pioneer Hi-Bred International, Inc. in Des Moines, Iowa. "There's an education in that process that helps you refine your own objectives. Even if, in the end, you're going to do it yourselves, you can learn a lot by talking with people in the business."

> **"A survey is not a short-term strategy. It has to have a long tail on it."**
>
> **Paul Dolbec** director, information technology audit, Unum, Portland, Maine

Involve customers early. "You can use a small subset of users as [a] test case," says Naomi Karten, president of Karten Associates, a consultancy in Randolph, Mass., that specializes in customer service. Karten says to ask the following: "Do these questions make sense? How do you interpret them? Get a sense of whether you're asking what you think you're asking."

There's an old debate about open-ended vs. multiple-choice questions. Multiple-choice questions don't tell you enough; open-ended questions don't get answered. Yes-or-no questions have problems all their own. "Generally with yes/nos, it appears they read the first two. And if they're both 'yes,' they answer yes all the way down," says Sandra Bernstein, budget/fiscal manager of the department of information services for San Diego County in California.

As a compromise, use open-ended questions like a condiment: sparingly to add flavor.

Bernstein says she uses three of these, which are tailored to the system under discussion: "What works best about it? What works worst about it? If you could have it do anything you want, what would it be?"

Sometimes respondents tell you what they think they should think rather than what they really think. If your pilot intranet is all the rage, for example, they may overlook its shortcomings against the older, less sexy system with which you want them to compare it.

Effective questioning

IS managers are borrowing from marketing techniques such as conjoint questioning to detect nuances in customer response. "It's a way of asking a number of questions that are then compared to drive out inconsistencies," says Kelly Chamberlain, technology center director at Pioneer Hi-Bred.

"We may need to know how to prioritize five things," he says. "Using conjoint, we ask the audience, 'What's more important — number one or number three?' Then, 'number two or number four?' We go through all the combinations, then we build a table that analyzes the responses. Nine times out of 10, the result is a surprise, and it's a different result than if we just asked them to prioritize the five things."

All your design genius will be wasted if no one returns the survey. You can appeal to their pride, their team spirit, their stomachs or their pocketbooks, but make them respond.

Often, making respondents feel part of a team effort is reward enough. "Share objectives," Dolbec says. "Tell them what you're trying to achieve."

Help people see they have a vital interest in the topic. "I had a task force meeting with people [who were] having real problems with a system and got them very involved," Bernstein says. "When I did a survey that followed up, they had lots to say because they felt [they were] a part of it at that point."

Let respondents know that their input changes things. "Have coffee and doughnuts," Dolbec says. "Tell them you appreciate their help and personally hand out copies of the results. If you are going to change things, let people know it's as a result of the survey. Close the loop.

"And while you're chatting, someone will say, 'I didn't really understand that question.' You'll get feedback you can use on the next round." ■

Melymuka is a freelance writer in Duxbury, Mass.

August Conferences

MANAGEMENT

Project World. Washington, **Aug. 5-9** — Contact: Project World, Inc., Wellesley, Mass. (617) 431-9797. Fax: (617) 431-0107 or (617) 943-4444. Web address: www.projectworld.com/projectworld.

Webmaster Perspectives. San Francisco, **Aug. 14-14** — Contact: *CIO Magazine*, Framingham, Mass. (800) 366-0246.

Managing Enterprise Networks and Systems Conference. Boston, **Aug. 14-15** — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880. Fax: (508) 470-0526. E-mail address: ConfReg@dciexpo.com. Web address: www.dciexpo.com.

Software: Issues, Contracts, Negotiations. Washington, **Aug. 22-23** — Fee: $995. Contact: International Computer Negotiations Workshops, Winter Park, Fla. (407) 740-0700. Fax: (407) 740-0368.

The Information Management Forum (implementing human resource initiatives). Baltimore, **Aug. 26-27** — Contact: The Information Management Forum, Atlanta, Ga. (770) 455-0070. Fax: (770) 455-0082. E-mail address: timf@mindspring.com. Web address: www.infomgmtforum.com.

Support Services Conference & Expo — West. San Francisco, **Aug. 26-29** — Fee: $895 to $995. Contact: Help Desk Institute, Colorado Springs, Colo. (800) 248-5667. Fax: (719) 528-4250.

INDUSTRIES

Midwest Computer & Accounting Business Management Show. Rosemont, Ill. **Aug. 27-29** — Contact: Illinois CPA Society, Chicago, Ill. (312) 993-0407.

USER GROUPS

HOT HAPPENING
HP World '96. Anaheim, Calif., **Aug. 4-9** — Contact: Interex, Sunnyvale, Calif. (800) 468-3739 or (408) 747-0227. Fax: (408) 747-0947. E-mail address: conference@interex.org. CompuServe address: 76376.1222. Web address: www.interex.org.

OSF/DCE User & Developer Conference. Boston, **Aug. 5-7** — Contact: OSF/DCE, Andover, Mass. (800) 767-2336. Fax: (508) 470-0526.

Powersoft International User Meeting and Training Conference. Orlando, Fla., **Aug. 18-22** — Contact: Powersoft Conference Registration, Waltham, Mass. (617) 800-2099. Web address: www.powersoft.com.

DDA Regional Rally. Boston, **Aug. 22** — Contact: The DDA, Association of the DEC Marketplace, Chelsea, Mich. (800) 332-1330 or (313) 475-8333. E-mail address: admin@dda.org. Web address: www.dda.org.

HOT HAPPENING
CA World. New Orleans, **Aug. 25-29** — Contact: Computer Associates International, Inc., Islandia, N.Y. (516) 342-5224.

TECHNOLOGIES

American Association for Artificial Intelligence (AAAI) '96, Innovative Application of Artificial Intelligence '96, Knowledge Discovery and Data Mining '96. Portland, Ore., **Aug. 2-8** — Contact: AAAI, Menlo Park, Calif. (415) 328-3123. Fax: (415) 321-4457. Web address: www.aaai.org/Conferences/conferences.html.

Macworld Expo. Boston, **Aug. 7-10** — Contact: Mitch Hall Associates Event Management, Norwood, Mass. (617) 551-9800 or (800) 645-3976. Web address: www.mha.com/macworldexpo.

HOT HAPPENING
DCI'S Data Warehouse World. New York, **Aug. 13-15** — Contact: Digital Consulting, Inc. (DCI), Andover, Mass. (508) 470-3880. Fax: (508) 470-0526. E-mail address: ExpoReg@dciexpo.com.

Intranets: Redefining Corporate Structure. Chicago, **Aug. 15-16** — Contact: International Business Communications, Southboro, Mass. (508) 481-6400. Fax: (508) 481-7911. E-mail address: reg:@ibcusa.com.

HOT HAPPENING
Object World West. San Jose, Calif. **Aug. 18-22** — Contact: Object World Corp., Framingham, Mass., (800) 241-4600 or (508) 820-4300. Fax: (508) 872-6500.

Calendar announcements should be submitted at least eight weeks prior to the event and include the title of the event, dates, location, theme or focus, keynote or major speakers, principal topics and a contact person, organization and telephone number.

SEND ANNOUNCEMENTS TO

Rick Sala, Associate editor/Managing, Computerworld
500 Old Connecticut Path, Framingham, Mass. 01701
Fax: (508) 875-8931

For online listings of conferences and workshops, visit @Computerworld at www.computerworld.com.

Executive Track

Scott D. Nason was named **American Airlines'**, first chief information officer. Nason, who was vice president of operations planning and performance, will oversee the data processing and computing services agreement between American and The Sabre Group, the airline's information technology arm.

William T. Houghton, president of the **Chevron Information Technology Co.** unit of Chevron Corp., is the recipient of the 1996 Lattanze Information Systems Executive of the Year Award. He was honored for elevating IT to a position of strategic importance within Chevron and strengthening the firm's retail and marketing functions.

Yusef Akyuz was named vice president of IS at **Timberland Co.** in Stratham, N.H. He was previously director of MIS at Rockport Co.

Lance J. Naber joined **Enterprise Technology Corp.** in New York as vice president of the financial services consulting firm's strategic technology consulting practice. Naber was CIO and managing director at Rogers, Casey and Associates, a pension-fund consulting firm in Darien, Conn.

John Parady was named executive vice president and CIO at **CB Commercial Real Estate Group** in Los Angeles. The 25-year IS veteran previously was CIO at Coldwell Banker in Mission Viejo, Calif.

Jonathan French was named vice president for software development at **Americast**, the telephone company programming venture of Ameritech Corp., BellSouth Corp., GTE Corp., SBC Communications, Inc. and The Walt Disney Co. Prior to joining Americast, French was director of interactive video and multimedia software at Southwestern Bell Technology Resources, the research and development subsidiary of SBC Communications. Americast, based in Los Angeles, plans to develop and offer consumers video programming and interactive services via its telephone company partners.

Sellitto

Westcott

Rich Products Corp., a frozen foods manufacturer in Buffalo, N.Y., has promoted **Michael D. Sellitto** to director of operations and technical services for IS. Sellitto had served as a telecommunications manager. The company also appointed **Jeffrey H. Westcott** manager of microcomputer services. Westcott joined Rich Products from Graphic Controls Corp.

Count on PowerPC technology. Count on the power behind it.

PowerPC

In the last year alone, millions of PowerPC™ microprocessors were designed into new products, from automobiles to high-end computer systems. In fact, they've already outsold all other major RISC-based desktop microprocessors combined.

And with a 200MHz version (the first ever for volume desktop), the Apple, IBM and Motorola (AIM) alliance is continuing its high-performance leadership. The AIM Alliance is also developing the PowerPC Platform™ specification for a common hardware reference platform, which will allow any user to run the Windows NT,™ Mac™ OS, AIX® and Solaris™ operating systems—all from a single computer.

Of course, the AIM Alliance members aren't just counting on PowerPC technology, they're building a host of products around it. Apple's entire product line is built on PowerPC Architecture.™ IBM has created several lines of next-generation servers, including the AS/400® and RISC System/6000®, on PowerPC technology. And Motorola offers an impressive range of PowerPC microprocessor-based boards and systems, from personal workstations to high-end servers. Plus with our newly opened, billion-dollar PowerPC microprocessor fabrication facility, our commitment is now stronger than ever.

But the people who developed PowerPC technology aren't the only ones who count on it. Companies like Ford, Xerox, Honeywell and others are designing PowerPC Architecture into their products. Creating the momentum that's changing the future of technology forever. Call 1-800-845-MOTO, ext. CW, or visit http://www.mot.com/PowerPC/ to find out more about PowerPC Architecture. And the power behind it.

MOTOROLA

What you never thought possible.™

©1996 Motorola, Inc. All rights reserved. Motorola and Ⓜ are registered trademarks of Motorola, Inc. AIX, AS/400 and RISC System/6000 are registered trademarks, and PowerPC, the PowerPC logo, PowerPC Architecture and PowerPC Platform are used under license and are trademarks of International Business Machines Corporation. Windows NT is a trademark of Microsoft in the United States and/or other countries. Solaris is a trademark of Sun Microsystems, Inc. Mac is a trademark of Apple Computer, Inc. All other brand and product names are the trademarks or registered trademarks of their respective holders.

In Depth

Object Lessons

Four pioneers compare notes on adopting object technology and pushing it to the enterprise level

"Some folks wouldn't know an object if it came up and bit them. 'I just read that in *Reader's Digest*, so I'm an expert.' Oh, really?"
— Bill Edwards, Sprint

BY STEVE ULFELDER

We recently gathered representatives from four early adopters of object-oriented technology to discuss the present and future of distributed object applications. The participants' information systems departments have developed first-generation distributed object applications that are business-critical and deployed at the departmental level. We asked about the challenges and benefits of those systems.

The participants are also taking the next step — moving to a new generation of mission-critical applications that are deployed enterprisewide. They talked about their goals and how they plan to achieve them.

The roundtable participants were Bill Edwards, chief scientist at Sprint Corp.'s Long Distance Division in Overland Park, Kan.; Mark Freeman, vice president of fixed-income research at Goldman, Sachs & Co. in New York; Pat Kerpan, managing director of financial products at Canadian Imperial Bank of Commerce (CIBC) in Toronto; and Colin Scott, associate partner at Andersen Consulting in Chicago. John Rymer, vice president of client/server development at Giga Information Group in Cambridge, Mass., moderated the roundtable at the Back Bay Hilton in Boston.

JOHN RYMER: Why don't you each take us through the basics of your business case and some of the challenges you've faced?

PAT KERPAN: CIBC Wood Gundy is a basically new venture for Canadian Imperial Bank of Commerce. It's similar to a foreign investment bank. We had to go from almost no infrastructure, almost no people. That meant we had to move quickly. People say, "Build vs. buy?" It was "Buy, baby, buy." We had to acquire a series of third-party trading systems. And now you're into the integration game — getting these systems to interoperate was the challenge.

We also found ourselves with the need to bring Unix to the world of Microsoft. In the trading world right now, most vendors sell into the Unix base. But the reality is more and more people want a platform for communication and collaboration as their day-to-day tool. So now you're into your E-mail and, in our case, Microsoft Office and so on. So both of those had to be on everybody's work space.

The other business driver was that we are a global group. A lot of people talk the global game, but they really are local workgroups. As soon as you say, "Well, now I need to save this information, and everybody in the world has to have a common view, and everybody in the world has to edit everything" — I don't think you can buy those kinds of systems. That's why, I think companies like mine always end up with somebody like Expersoft [a San Diego provider of distributed object applications]. They truly are the businesses that have to have this global, extended workgroup view.

MARK FREEMAN: The problem we faced was we were a very trader-specific world. There was a group that supported futures. There was a group that supported government. There was a group that supported corporate bonds, mortgages — you name it. And nothing talked to anything else. We wanted just one set of everything. We didn't want a million different development efforts. We were already pretty much object-oriented, but we had three different sorts of implementations. There was the C++ world. There was an internal homegrown language. Then there were C-based objects in several different flavors. We needed to tie them all together.

BILL EDWARDS: At Sprint, we're a global telecommunications provider. Johnny Strand [John A. Strand III, director of technology planning and integration at Sprint] coined the term "integrated services management" in order to move Sprint off the dime from just the No. 3 carrier network into more of a technology epiphany.

We wanted to build on what was there — legacy, enterprise. We wanted to migrate to distributed-type systems-sharing — heterogeneity rather than just homogeneous scenarios. Strand decided to project the corporation as one. You know, one invoice, one network, one salesman, one marketing droid and so on and so forth.

"If the Java hype continues the way it's going, we all have to address that problem. It's not going to go away."
— Colin Scott, Andersen Consulting

COLIN SCOTT: About five years ago now, Andersen started what's called Project Eagle, where we attempted to reinvent the way Andersen built software systems. Before that, we weren't making substantial advances in the way we built systems. We were allowed to work for two, three years behind closed doors with no one bothering us. We were given pretty much a blank sheet of paper so that technology had to kind of earn its place in what we were trying to do.

We knew we were trying to focus on leveraging the knowledge capital inside the firm, as we put it. We knew that reuse was going to be fairly significant, and that tended to push us into this area of object orientation and particularly the area that I was interested in, which is the distributed object architecture.

We started looking around at tools that were out there, and one of the sets of the tools to look at [was] distributed object architectures. We narrowed it down to about four that we looked at in some detail, and Expersoft came out relatively near the top. So we thought, "We'll go with Expersoft."

Project Eagle is pretty much complete. We have four, five, six major client engagements that we're using Eagle technology on — not many of which I can actually tell you about, unfortunately.

RYMER: You can't tell us much about the projects themselves, but what have the folks involved in the projects told you about the technology's impact on development? Is it achieving what you anticipated it would, leveraging all this industry knowledge that's accrued inside Andersen? Is it cutting time to delivery?

SCOTT: It certainly seems to be. We have relatively small amounts of data at the moment, and it's difficult sometimes to compare, but there is a substantial productivity improvement when you develop the application itself. We, as yet, don't know much about the long-term maintenance, but object-oriented systems appear to be easier to maintain.

EDWARDS: At Sprint, we're up to around 60 projects. You disseminate all of these ideas and technology throughout the corporation, and we're finding out that a lot of people want to join the group. We ship people out after a year and a half, two years to other groups inside the corporation, and there they go through a mentoring/teaching scenario.

RYMER: Have you seen any cost-savings?

EDWARDS: As far as the benefits to the company in the past 2½ years, we look at it in the terms of hundreds of millions of dollars.

RYMER: People talk a lot about CORBA [Common Object Request Broker Architecture]. How did you come to the decision that CORBA should play a role in your organization? How do you see CORBA evolving, or how do you see your approach to it evolving?

KERPAN: If you look at what CORBA I did, you can politely say it was nothing. And if you look at how long it's taken to get CORBA II, the pace of the standard is so slow that three guys in a garage can actually write a competitive product. So I think that competing technologies are less of an issue than competing approaches. One approach says, "Get something out there that works for people." Sure, you use CORBA. You build your own transactions; you build your own synchronization. The thing that's most important to us is reliable event delivery and some automated cache synchronization.

FREEMAN: Frankly, we sort of laughed at CORBA I because it didn't do a whole hell of a lot for us. We certainly have our own message-oriented middleware, which survives and will live on for a long time. What led us down the CORBA path was we saw that it was very easy to build servers. We could see how to layer services on top of servers. Pat's comment about how two guys in a garage can build stuff and keep up is appropriate. We just do it ourselves. If it's not there, we can build it. The advantage of CORBA is that it's given us the tools to put things together.

SCOTT: CORBA always seemed to be technology looking for a solution. It was out there saying, "Gee, we've got this cool technology. I wonder what we can do with it?" And we at Andersen were saying, "Well, we know what you can do with it." We've tried to build an architecture on top of CORBA; that's the basis of most of the Eagle-based systems that we're now shipping.

RYMER: The Web and Internet approaches coming in are changing a lot of people's thinking about distributed systems. How is this going to get resolved?

SCOTT: With a 1997 delivery date for tool capability, we concluded that we had to have an HTML [Hypertext Markup Language]-based interface; otherwise, we would be dead and look foolish. So we build that way. We've started to build thin-client models again, which is good, but I have the feeling we're going to reinvent all the things that we knew already. Some of the people who

Object lessons, *page 70*

"Reliability is critical. Transactions will become more and more critical as we try to move into the back office."
— Mark Freeman, Goldman, Sachs

Object Lessons

CONTINUED FROM PAGE 69

worked on mainframes 20 years ago are laughing and watching us burrow ourselves deeper and deeper into the hole.

But I think there's a lot there, and if the Java hype continues the way it's going, we all have to address that problem. It's not going to go away.

FREEMAN: We have a similar view. And if Java isn't the one that's going to be there, we will write HTML applications. Down the road, we certainly are intrigued by the Java/CORBA connection. What worries us there is connectivity. You know, the Web now is used to deliver little applets of Java, which look really snazzy. But if you give [users] a heavyweight application that's Java, how is that going to look on somebody's machine?

EDWARDS: We're looking at these scenarios in a prototypical sense on a small scale. If I use an HTTP [Hypertext Transport Protocol] server, which provides access to corporate clients, what does that really mean to the user sitting out there with a search engine going through various types of gateways? What does the Internet really mean to them with respect to Netscape [Communications Corp.] or so forth?

KERPAN: The nice thing about a Web interface is it's a low-cost entry for allowing somebody to almost dip into your point of view, just briefly. To give them an entire tool set just burdens everybody. The Web browser is just a nice, low cost of entry.

RYMER: Talk of the Internet brings up questions about security. Are you getting what you need? What are you looking for to go to the next level? After all, to many people, one of the definitions of "mission-critical" is reliability.

EDWARDS: I don't see a whole lot of work needed. We're funding some research with Purdue University on these types of things. We have to look at the security aspects of the applications distributed across the entire network. We don't want anybody hacking on that stuff. We're looking at call setup, authenticated signal.

KERPAN: We use some fairly fascist security stuff on the internal network. Then all your databases have various forms of security built in to them, and then your servers have forms of security built in to them, and then your applications. . . . Security just permeates the entire approach. It's part of the air you breathe.

RYMER: OK, now, as we wrap it up, I'll represent the big part of Jeffrey Morris' curve on the adoption of technology. I'm listening to this discussion, and I hear a lot of complexity, and I hear a lot of things I have to build myself. What are the key things I need to know as I follow you into this space? What are the key lessons to help me be successful?

FREEMAN: First off, get the developers. You need to find a group of people who have some experience with object-oriented design. Focus on your environment. Make sure you have a stable network — that whatever demons are out there are out there and running all the time.

Choose an initial application. It's probably going to be wrong. It's probably not going to work very well. Keep it simple. Do not fall into the trap of arguing over what gets distributed and what doesn't get distributed. Choose a way.

RYMER: So, it's really a proof of concept?

FREEMAN: Yes. Take it very, very slowly.

KERPAN: I think the issue is getting out of the mind-set of systems and moving to the mind-set of platforms. If you start to think you're there to provide a platform for interaction, it's a very natural course to take.

> **"If you look at what CORBA I did, you can politely say it was nothing. The pace of the standard is so slow that three guys in a garage can actually write a competitive product."**
> *— Pat Kerpan, Canadian Imperial Bank of Commerce*

EDWARDS: Make sure you surround yourself with some fairly sophisticated engineering types, whether it be computer engineering, electrical engineering. People who know how to hack code. People who aren't afraid to get into the design phase and roll up their sleeves, who have a take-charge mentality. ■

Ulfelder is *Computerworld*'s senior editor, In Depth.

Back row: Sprint's Bill Edwards, moderator John Rymer of Giga Information Group, Andersen Consulting's Colin Scott. Front row: Pat Kerpan of CIBC, Mark Freeman of Goldman, Sachs.

Computer Careers

By *the* Book

Looking to make the most of your reading time this summer? A variety of new career-related books may do the trick.

Rise & Resurrection of the American Programmer

By Edward Yourdon
PTR Prentice Hall, Prentice Hall, Inc., Upper Saddle River, N.J.; 1996; 318 pages; $26.95, hardcover.

Only four years ago, Yourdon, the self-appointed godfather of America's programmers, scandalized many software professionals with the title of his book, *Decline and Fall of the American Programmer*.

Yourdon now offers a pat on the back and declares that American programmers aren't so bad. Indeed, they may be better than some of the overseas competition he once lauded. In *Resurrection*, Yourdon revisits some of his previous points and explains how he reassessed his subject.

The balance of the book offers his vision of how the American programmer can be further improved and kept at the leading edge.

That vision incorporates his arguments about international competition, which is increasingly skilled. An example is low-cost programmers in India. Yourdon says America has been "saved" to some extent by advances such as visually oriented development tools, which have helped boost productivity.

Yourdon also takes a detailed look at how to improve projects and both personal and organizational performance. And he analyzes some of today's hottest technologies, such as Java, and takes a look at the future of the Internet. His book provides resources for navigating no matter how the chips fall.

—Alan R. Earls

The Internet University: College Courses by Computer

By Dan Corrigan
Cape Software Press, Harwich, Mass.; 1996; 488 pages; $30.45, includes shipping, paperback.

The title promises more than this book delivers. Instead of being a comprehensive guide to education via the Internet, it offers a basic Internet tutorial and many lists of educational resources.

If, like most information systems professionals, you're already Internet-savvy, go directly to Part IV, which covers trying out college courses to get credit, high school and equivalency education, personal enrichment courses and student financial aid. In the personal enrichment area, for example, the book says the University of Washington offers a C or C++ application development course for no academic credit; students can communicate by electronic

mail with the instructor.

There is a useful 200-page listing of educational courses on the 'net. For example, City University in Renton, Wash., offers 11 management courses online. Students can use the university's World Wide Web site to apply for admission, register for classes and send questions and assignments.

The writing is only adequate. And Corrigan too often substitutes lists for explanation. The section on finding financial aid does little more than list newsgroups and Web sites. Another 78 pages list Internet service providers, mailing lists, newsgroups, Telnet and file transfer protocol sites and academic Web sites.

—Steve Alexander

Murder Yet to Come

By Isabel Briggs Myers
The Center for the Application of Psychological Type, Inc., Gainesville, Fla.; 1995; 244 pages; $15, paperback.

Some people have personalities so irritating you could just kill them. Or so it seems. This is a story of just such a murder and the assorted characters who solve it.

Although a murder mystery may seem out of place here, this one may hold interest for information systems professionals who have undergone Myers-Briggs personality-typing at work. *Murder Yet to Come*, first published in 1929, was the first novel by Briggs Myers. Based on her Myers-Briggs Personality Type Indicator, all 16 personality types familiar to many IS project team members are found here.

The story concerns a sophisticated, award-winning New York playwright who, along with his trusted secretary and his old Marine comrade-at-arms-turned-detective, is summoned to the estate of Malachi Trent

by Trent's business agent. It seems Trent is eager to marry a client's young niece, Linda. But when the four men arrive at the mysterious mansion, they find the millionaire dead and Linda standing over his body, unable to remember a thing.

That sets off a drawing-room drama that reads like a late-night black-and-white thriller, complete with an exotic butler, who almost immediately becomes a prime suspect.

It's the group dynamic of this gathering that keeps the story interesting. Using the book as an exercise in personality-typing might be taking it a tad seriously. But if nothing else, this book's got personality.

—Leslie Goff

Hook Up, Get Hired! The Internet Job Search Revolution

By Joyce Lain Kennedy
John Wiley & Sons, Inc., New York; 1995; 250 pages; $12.95, paperback.

Seasoned IS professionals can gauge the usefulness of this book from its title — job hunting on the Internet has been more evolutionary than revolutionary.

Still, the book is a great resource for IS professionals trying to figure out *where* to hunt for jobs on the 'net. It's worth perusing, even if it means hunkering down in the public library or on the floor of your local bookstore for an hour.

For inspiration, read Chapter 2, which includes seven real-life accounts of people who found jobs online.

And Chapter 3 handily outlines the various types of resources available, from online services to anonymous file transfer protocol to the Archie, Jughead and Veroni-

ca protocols.

Then go directly to Chapters 4 and 5 to find out where to post your resume and where to scan for openings. The two chapters index the vast number of World Wide Web sites, news groups, bulletin boards, mailing lists, Telnet files and other Internet hot spots for job seekers.

Because many of the online job banks were originally designed to grab the attention of early 'net users, those chapters end up providing a nearly customized road map to finding an IS position. *—Leslie Goff*

Alexander is a freelance writer in Edina, Minn. Earls is a freelance writer in Franklin, Mass. Goff is a freelance writer in New York.

Comet Group International is still offering adventures to those interested in being a part of the Year 2000 Mainframe Systems challenge. One of our large clients in Saudi Arabia is embarking on an exciting project to avert disaster that will occur on January 1st, 2000. Even today, systems are being impacted by this date and the time to act is now! We offer long term, lucrative, tax-free salaries that also include free furnished housing, transportation, air tickets, medical coverage. Additionally, we offer you opportunities to travel to destination of your choice with flexible paid vacation schedules and holiday's. Comet Group International is a multi-national company and have been established in the region since 1975. Our client relations are long standing with American management, we understand you and the needs of our clients that makes for a solid relationship. We offer this adventure to experienced Mainframe Systems experts with the following skills:

- YEAR 2000 EXPERIENCE
- INFORMATION & BUSINESS SYSTEMS (SSP/BSP), ANALYSIS, PROGRAMMING, TESTING
- IBM/MVS, VSAM, TELON, COBOL, COBOL II, IMS DB/DC, DB2, JCL, ENDEVOR, PANVALET, PL/1, CICS 4.1, ADF, SAS.
- THOSE WITH THE FOLLOWING EXPERIENCE ARE CONSIDERED A PLUS: DUNN & BRADSTREET (MILLENNIUM, VIEW POINT, PC LINK, ETP), ADW, IEW, MICROFOCUS COBOL II, VIASOFT PRODUCTS (VANTAGE 2000).

Don't miss this excellent opportunity, send us your detailed resume now to:

COMET GROUP INTERNATIONAL, P.O. BOX 341, DHAHRAN 31932, SAUDI ARABIA FAX NO. 011-9663-895-4077
E-MAIL: 104134.2171@COMPUSERVE.COM

PROGRAMMER ANALYST (2 openings) (Ref# 71496): Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd to develop program using structured analysis & design, convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer apply knowledge of computer programming techniques & computer language; analyze, design, develop, implement, test & document Windows-based business database applications using object oriented programming methodology & graphical user interface with client-server architecture & using each of the following: IBM 3090, PC's (Pentiums), Visual Basic, Microsoft/Sybase SQL Server, DB2 MS Access, MS Windows NT Server ODBC, MS-NSM, WCL TOOL, MDI Gateway, Rabbit Gateway Crystal Report, C, C++, Windows SDK, OLE, Lotus Notes, PVCS and MS LAN Manager & using ORACLE & UNIX. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv in ed. & exp. & 2 yrs exp in the job offered or 2 yrs exp in a related occup. such as Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant, Research Assistant or Consultant. Will accept 3 yrs. college ed. plus 3 yrs. exp. in the job offered or in a related occup. in lieu of the req'd ed & exp. Must have some related exp analyzing, designing & developing database applications & using each of the following: C, C++, Visual Basic, MS Access, MS Windows NT Server, Crystal Reports, MS-NSM and ODBC. $42,940/yr., 40 hrs/wk., 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Ref #. Employer Paid Ad

SOFTWARE ANALYST/DEVELOPER to maintain and develop Design CAD 3-D for Windows, DOS, Macintosh and/or UNIX versions. The job requires the ability to research and develop Computer Design/Drafting for any of these versions. The applicant must have at least a Master's Degree in Computer Science, Mechanical Engineering or Industrial Engineering. The applicant must have one year experience in CAD, Computer Simulation, Computer Animations and graphics programming; minimal programming experience in DOS, Windows, and Macintosh systems, and knowledge of AutoCAD C/C++, Basic and Autolisp programming languages. Fluency in a Chinese is beneficial due to technical support of programs sold overseas. Working hours am & am-6 pm. Salary in $44,000 per year. EOE. Submit resume to Oklahoma State Employment Service (ID# 4600), 219 NE 1st St, Pryor OK 74361 (918) 825-2582. JO #222002

PROGRAMMER ANALYST (2 openings) (Ref# 74986) Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time req'd., compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design; convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language; analysis, design & development of system including process flow & data flow design, data modeling, technical support & overall design of the application entry part of the system; design applications using PRIMOS, DATATRIEVE, VAX COBOL, DB2/CICS on IBM 3090 using the following: IBM 3090, MVS/ESA, CICS, DB2, INTERTEST, SPUFI, TSO, REXX, VSAM, JCL, FMS, PLATINUM TOOLS, Micro Focus Workbench & VS COBOL II. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv in ed. & exp & 2 yrs exp in the job offered or 2 yrs exp in a related occup. such as a Programmer, Programmer analyst, Systems Analyst, Software Engineer or Consultant; exp accept 3 yrs college ed plus 3 yrs. exp in the job offered or in a related occup. in lieu of the req'd ed & exp. Must have some related exp including using VAX-COBOL & DATATRIEVE. $47,250/yr. 40 hrs/wk. 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Ref # Employer Paid Ad

PROGRAMMER ANALYST (2 openings) (Ref# 75096) Plan, develop, test and document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time req'd, compatibility with current system & computer capabilities, consult with users to identify current operating procedures & clarify program objectives, formulate plan outlining steps req'd. to develop program using structured analysis & design, convert project specifications, using flowcharts & diagrams into sequence of detailed instruction & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language; analysis, design & development of systems, including process flow & data flow design, technical support & overall design using the following tools: IBM 3090, PC-AT/486, MVS/ESA, CICS, DB2, INTERTEST, SPUFI, TSO/ISPF, VSAM, JCL, PLATINUM TOOLS, MICROFOCUS WORKBENCH, VS COBOL, COBOL II, MS WORD, NOVELL NETWARE LAN & ENDEVOR. Reqs: Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv in ed. & Exp. & 2 yrs exp in the job offered or 2 yrs. related exp such as Programmer, Programmer Analyst, Analyst Programmer, Senior Programmer, Systems Analyst, Software Engineer or Consultant. Will accept 3 yrs. college ed plus 3 yrs. exp in the job offered or in a related occup. in lieu of req'd ed. & exp. Must have some related exp using each of the following: IBM 3090, COBOL, CICS, VSAM, JCL & TSO/ISPF. $47,000/yr., 40 hrs/wk., 8a-5p. Send resumes to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202 & include Ref# Employer Paid Ad

ENGINEER, Design. $50,000/yr. Design and develop CMOS VLSI chips, using elec design automation ("EDA") have to perform placement & routing of ICs, extract resistance & capacitance data from physical layout, develop design rule check & layout vs. schematic s/w to perform chip design verification, write s/w functional & structural models, & perform layout, simulation, verification, & performance evaluation. 40 hrs./wk. Req: M.S. in Elec Eng. or Comp Eng. Must have acad project, research or exp. background in use of Mentor Graphics EDA have to layout VLSI chips; model & synthesize design, & simulate performance, writing s/w to extract device level parasitic data. Coursework in: digital signal processors; IC fabrication, microprocessors & applications; VLSI systems; solid-state electronics. In-depth knowledge of: C, UNIX, Perl scripts, Assembly language programming. Place of employment and interview Austin, TX. If offered employment, must show legal right to work permanently in the U.S. Apply at the Texas Employment Commission, Austin, Texas, or send resume to the Texas Employment Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, J.O. #TX7856250. Ad Paid by An Equal Employment Opportunity Employer

Consultant. Design, develop, implement & test software applications for management information systems, including telecommunications. Object oriented design. Tools: MCTS (monitoring, testing & analysis of SS7 networks). UNIX device driver development; C/C++, TCP/IP. M.S. in Computer Science* as well as 6 months in job offered or as Software Engineer required. (*M.S. in any engineering field + 1 yr experience in programming also acceptable.) Previous experience must include C, C++, UNIX object-oriented design, data communications. 40 hrs/wk (9am-5pm). $45,000/yr. Must have proof of legal authority to work permanently in the U.S. Send resume to: Uteh, Inc. Attn: Jeff Fang, 915 Harger Rd., Ste 350, Oakbrook, IL 60521 (708) 573-9888. REF# 070196

SAP R/3 Systems Analyst/Project Manager (Framingham, MA & client sites) Plan, manage & coordinate activities of designated projects to ensure goals & objectives are met, confer w/ national & multi-national clients to analyze user requiremts & co. operatns for SAP (Systems Appl & Products in Data Processing) implementatn in a client-server environmt; design processes, interfaces & report transactns, design & create customized functionality utilizing SD (Sales & Distributne) & MM (Material Managemt) modules in ABAP/4, prepare detailed document reports & specificatns, determine key areas in SAP which have greatest impact on client's implemtatn, upgrade & adjustmt of systems to assure optimal integratn w/in modules & train MIS professionals on use of SAP technology. Bachelor's Degree in Comp Sci or Economics + 3-yr exp in job offered or 3-yr previous exp as Systems Analyst/Engineer, exp must incl SAP R/2 RM & RV appl w/database report generatn & database batch & interface design & implemtatn. May req short/long term relocatn at Co's expense to various client sites in US to meet Co. contract obligatns. 40 hrs/wk, OT as needed, 9-5, $85K/yr. Send ltr/resume in dupl to Case #60298, PO Box 8968, Boston, MA 02114

Software Consultant, Math Algorithms Development. Under limited supervision, research mathematical description of geometry & design math algorithms for CAGD to describe process; evaluate modify the shape of geometric entities, program in C & C++ in Windows NT Windows 95 or UNIX, write test plans & conduct tests to certify new software, direct details of design/implementation of math algorithms from math & computer sci/progg aspects, act as group leader for up to 2 Sr S/W Analysts & S/W Analysts, providing tech'l guidance, present mgmt design proposal & plan & work out detailed design & test procedures for implementation, IO & correct system or progg problems w/in scope of project. Requires Bachelors/equiv in Math, Engg, Comp Sci or related field & 5 yrs exp in above duties or 5 yrs exp in research & design of mathematical algorithms for geometry for CAD/CAM systems using C or C++ in Windows NT or UNIX. Will accept Masters/equiv in stated fields w/4 yrs same exp or Doctorate/equiv w/2 yrs same exp. $49,920/yr, 8-5, 40 hrs/wk. Resumes to M Thomas, AL State Employment Service, 2535 Sparkman Dr., Huntsville, AL 35810-3825. Job Order AL5071274 EEO.

Systems Analyst needed for computer consulting firm located in Tampa, Florida. Job duties include: Design, develop, implement, test, maintain, and enhance a variety of software applications. Confer with data processing unit and define system requests. Plan and prepare technical reports, memos and instructional manuals. Analysis and design of software-applications utilizing electro mechanical apparatus. Use C, C++, XWindows/Motif, Informix 4GL, SQL, Shell scripting, and Unix. Applicant must have B.S. degree in Computer Science 1 yr of exp in the job offered or 1 yr exp. as a Programmer/Analyst with 1 yr exp. in analysis and programming of computer applications. C and UNIX. Must also have 6 mos exp with Informix/4GL and Shell scripting. 40 hrs/wk, 8:00 am - 5:00 pm, Mon-Fri. $36,700/yr. Send resume and cover letter (no calls) to: Job Service of Florida, J.O.# FL 1443184, 2312 Gulf-To-Bay Blvd., P.O. Box C, Clearwater, FL 34618-4090

Programmer/Analyst - var client sites in metro Boston area & elsewhere, (Co loc in Burlington MA). Evaluate existing systems, analyze needs; modify & enhance modules to applications, s/ware, programs; write code, test & debug. Use Sybase, PowerBuilder, MS-Visual Basic, C++, Lotus Notes. Bachelors/Comp Sci or Engg or Math. 18mos/exp in job offered. Exp must incl 1 yr using Sybase, MS-Visual Basic, C++ & 6mos using PowerBuilder & Lotus Notes. 40hrs/wk (9-6 M-F) $40,000/yr. Send resume in dupl to Case #60583, PO Box #8968, Boston, MA 02114

Software Engineer, 40 hrs/wk, 8-5; $40,017.98/yr. Design & develop automated shop floor data collection systems per customer specifications including process reengineering & streamlining of operations. Conceptualize, prototype & engineer new products. Provide technical support for sales & marketing. Responsible for hardware configuration of communication subsystems. Involved in cost benefit analysis of new products & porting existing products to new platforms. Responsible for software development lifecycle & for feature/performance enhancements for new products. Supervise a Programmer Analyst. Min Reqs: MS in Computer Science, 1 year in carrying out the duties set forth in the job offer OR 1 year in developing an automated real time data collection system in a manufacturing environment using C & TCP/IP protocols & device drivers, in TIP programming under UNISYS 2200 series, & in HLCN on the UNISYS A-series mainframe system. Past design & implementation of a UNIX kernel subsystem & a client/server multi-process scheduling system. Mail resumes to: Oklahoma Employment Security Commission, 1115 S. Aspen Ave, Broken Arrow, OK 74012. Refer to Job Order #222068

SOFTWARE ENGINEER: (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., $49,000/yr. Carry out the system analysis, system design, development, testing and preparation of internal and external design utilizing COBOL, PASCAL, COMS and DMSII. Reqr bachelor's degree in Computer Science or Electrical or Mechanical Engrng. or equivalent*. Reqr 3 yrs of expr in job offered or 3 yrs in Systems Analysis &/or Programming &/or Computer Consulting &/or S/W Engrg. *Equivalent includes 7 yrs of expr in job offered or related occupation in lieu of bachelor's degree and 3 yrs expr in job offered or related occupation. Reqr work expr in development of s/w systems utilizing COBOL, PASCAL, COMS and DMSII. Employer in a s/w development/consulting firm. Relocation to client sites throughout the U.S. for periods of 6 mos to 2 yrs required. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref No. 02796

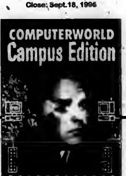
Consultant, 40hrs/wk, 9am-5pm, $62,400/yr. Design, development, implementation & testing of software for business applications. Client/server & object-oriented technology. Tools: C/C++, Visual Basic, ODBC, OLE, Presentation Manager. *B.S. in Computer Science as well as 2 yrs. experience in job offered or as Software Specialist required. *4 yrs. experience as a programmer is acceptable in lieu of B.S. Previous experience must include: C/C++, object-oriented technology, Visual Basic, ODBC, OLE, Presentation Manager. Must have proof of legal authority to work permanently in the U.S. Send two copies of cover letter & resume to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 3 South, Chicago, IL 60605. Attention: Len Boksa. Reference #V-IL15676-B. NO CALLS. An Employer Paid Ad.

PROGRAMMER/ANALYST: (2 positions) 40 hrs./wk., 8am-5pm, $38,095/yr. Carry out the program analysis, program design, coding and testing of software application systems under UNIX environment utilizing SQL*FORMS, SQL*REPORT WRITER and C. Reqr Bachelor's degr in Computer Science or Electronics or Mechanical Engrng. and 1 yr expr in job offered or 1 yr expr in Systems Analysis &/or S/W Engineering &/or Programming &/or Computer Consulting. Reqr experience with development of s/w systems and with UNIX, SQL*FORMS, SQL*REPORT WRITER and C. Employer in S/W development/consulting firm. Relocation to various client sites throughout the U.S. for periods of 6 mos. to 2 yrs. required. "Employer paid ad" E.O.E. Send resumes to: 7310 Woodward Ave., Rm 415, Detroit, MI 48202. Ref #31096

COMPUTERWORLD
9th Annual
Campus Edition

Recruit top I.T. students from top I.T. Campuses!

Issue Date: Oct. 31, 1996
Close: Sept. 18, 1996



Plan Now!
1-800-343-6474, x8201

PROGRAMMER ANALYST (2 openings) (Ref# 81596) Plan, develop, test & document computer programs, applying knowledge of programming techniques & computer systems; evaluate user requests for new or modified programs to determine feasibility, cost & time required, compatibility with current system & computer capabilities; consult with users to identify current operating procedures & clarify program objectives; formulate plan outlining steps req'd. to develop program using structured analysis & design, convert project specifications, using flowcharts & diagrams into sequence of detailed instructions & logical steps for coding into language processable by computer; apply knowledge of computer programming techniques & computer language, analysis, design & development of system under client/server environment, including each of the following: Meeting users to gather application requirements, develop user requirement documents, process flow diagram & data flow diagram, data modeling (Logical/Physical), overall system design, detail system design under client/server techniques, develop test plan & test data, redesign existing system under client/server environment using reverse engineering, techniques & using each of the following: Visual Basic, SQL Server, SQL Forms 3.0, Report Writer, MS Access, Client/Server Techniques, Powerbuilder, ORACLE 7, FORM, Report Writer, MF COBOL, IE and CASE tools. Reqs. Bachelor's in Computer Science, Systems Analysis, Computer Info. Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equiv in ed. & exp.; 2 yrs. exp. in the job offered or 2 yrs. exp. in a related occup such as Programmer, Programmer Analyst, Systems Analyst, Software Engineer, Consultant, Project Manager, Project Leader or Project Coordinator. Will accept 3 yrs of college ed. plus 3 yrs exp. in the job offered or in a related occup in lieu of the req'd. ed. & exp. Must have some related exp including using Client/Server techniques & reverse engineering projects & using each of the following: ORACLE 7, SQL Forms 3.0 and Powerbuilder. $55,880/yr. 40 hrs/wk. 8a-5p. Send resumes to 7310 Woodward Ave., Rm 415, Detroit, MI 48202 & include Ref # Employer Paid Ad.

Programmer Analyst. Plan, develop, test and document computer programs, applying knowledge of programming techniques and computer systems, evaluate user request for new or modified program to determine feasibility, cost and time required, compatibility with current system, and computer capabilities; consult with user to identify current operating procedures and clarify program objectives formulate plan outlining steps required to develop program using structured analysis and design convert project specifications, using flowcharts and diagrams, into sequence of detailed instruction and logical steps for coding into language processable by computer; design, develop, code and implement C applications, database design and administration, develop applications to support common access functions to and from an INFORMIX database using embedded SQL, develop client-server applications, develop CAD/CAM applications and use HP9000, HP-UX, C, SQL, SYBASE, MS-WINDOWS and CAD/CAM systems including Unigraphics. Reqs. Bachelor's in Computer Science, Systems Analysis, Computer Information Systems, Computer Engineering, Electrical Engineering, Electronic Engineering, Mathematics or its equivalent in education and exp. & 2 yrs. exp. in the job offered or 2 yrs exp. in related occup. as a Consultant, Asst. System Analyst, Senior Software Engineer, Programmer, Programmer Analyst, Systems Analyst or Software Engineer Will accept 3 yrs. of college ed. plus 3 yrs. exp. in the job offered or in a related occup in lieu of the required ed and exp. The experience in the job offered or related occup. must have included 6 mos developing Client-Server applications, developing CAD/CAM systems and using each of the following: HP9000, HP-UX, C, SQL, Sybase and MS-Windows. Must have proof of legal authority to work in the U.S. $43,000/yr., 40 hrs/wk, 8a-5p, M-F. Work in various unanticipated locations throughout the U.S. Send resume to Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Tower Two Suite 400 1515 Arapahoe Street Denver, CO 80202-2117 and refer to order no. CO 4480855. Application is by resume only. Employer Paid Ad

SAP

Global requirements permanent/contract positions. All R/3 modules Functional/Technical, ABAP/4 & Basis. Generous compensation benefits & visa sponsorship

Systems America, Inc.
Attn: Recruiting
3521 Silverside Road
Suite 2B1, Quillen Bldg.
Wilmington, DE 19810
Tel:(302)478-2990
Fax: (302)478-2995
Email: 74734.3571@compuserve.com

SOFTWARE ENGINEER required. Perform technical Quality Assurance on all software, particularly IBM Assembler & Digital VAX COBOL. Modify Assembler code to conform with installation standards & specifications. Maintain IBM CICS/DBE systems (Macro & Command Level) & ensure VAX COBOL RDB database systems produce specified output. Plan/implement system conversions & data porting from IBM to VAX or vice-versa. Three years experience required in the job duties described above. Must be willing to relocate to various unanticipated work sites throughout USA every 4 to 10 months. Employer Paid. Must have proof of legal authority to work in the U.S. Salary-$64,000/year for a 40 hour work week. Apply at the Texas Workforce Commission, Dallas, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701. J.O.#TX7854209. Ad Paid by An Equal Opportunity Employer.

PROGRAMMER/ANALYST (2 positions) 40 hrs/wk. 8 a.m. - 5 p.m., $41,900/yr. Carry out analysis of program specifications, program design, coding and testing of computer application systems under IBM mainframe environment utilizing DB2, CICS and CSP. Reqr. bachelor's degree in Computer Science or Electrical Engineering. Reqr. 2 yrs. exp. in job offered or 2 yrs. exp. as Systems Analyst and/or Programmer and/or Engineer. Reqr. work expr. in analysis and design of s/w applications on IBM m/f utilizing DB2, CICS and CSP. "Employer paid ad." E.O.E. Send resumes to: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref. No. 1245-96.

COMPUTER PROGRAMMER ANALYST, 9 am to 5pm, $60,000/year, 40 hours per week. Plan, develop, test and document computer programs for on line sales order processing system including integration of modules for order entry, shipping, bills of lading, invoicing, allocation, bills and exchanges in environment including: Unisace on MS-Windows, SQL Server, UNIX, Sybase. Bachelor degree in Electrical Engineering, for Electronics, or Computer Science, 2 years experience required. Contact LA Office of Employment Security, Job Order 080582, 1991 Woodlake Boulevard, Baton Rouge, LA 70806. Must have proof of legal authority to work in the United States.

TANDEM
COBOL, PATHWAY, TAL, SCOBOL, C, SQL, X.25

STRATUS
PL1, COBOL, C, ON/2

MIPS UNIX
SUN, HP, RS/6000, GUI, SDK, Powerbuilder C++, Visual Basic. Full/time/Consulting Positions available in the US/ABROAD

STRATEM
800-562-JOBS
TEL: (516) 677-9000
FAX: (516) 677-1950
EMAIL: tem@stratem.com
7600 Jericho Tpke
Woodbury, NY 11797

"We specialize in Placement of SAP professionals and have over 300 openings worldwide for long term contracts and permanent positions. We have low overhead, so we can pay you TOP rates!

People Unlimited
1805 Sardis Rd. N. #103
Charlotte, NC 28270
Phone: 704-841-1135
Fax: 704-841-1173

Start your day...

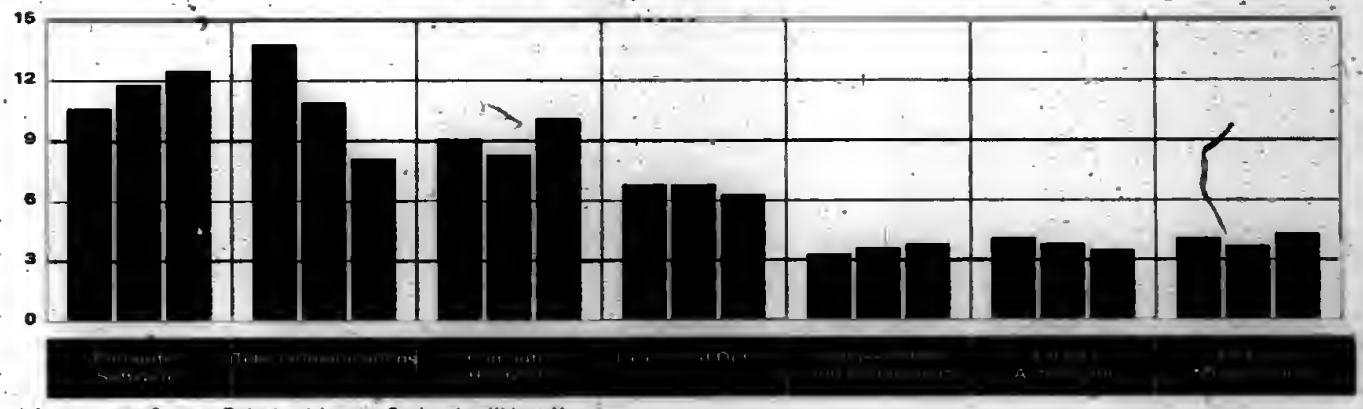
COMPUTERWORLD
The Internet Connection for the IT Community

www.computerworld.com

CorpTech Career Index

April May June

Percent change in number of employees by region



© Copyright 1996, Corporate Technology Information Services, Inc., Woburn, Mass.

JOIN THE SUCCESS OF A $20 BILLION INTERNATIONAL LEADER!

Aon, a $20 billion international insurance and financial services leader headquartered in Chicago, is seeking several qualified Application Developers to fill a variety of Programmer/Analyst and Senior Programmer/Analyst positions.

Successful candidates will have 3+ years experience in a variety of skills, including:

- COBOL, BAL, VSAM, TSO/SPF, and application development tools in a mainframe environment
- DBMS IDMS preferred, CICS and ADS/O
- AS/400 platform experience, including RPG, RPG400, DB2/400, CL, AS/400 operations and utilities
- Communication and analysis expertise
- Proficiency in technical leadership, creative problem solving and systems design
- Insurance and/or accounting experience a definite plus

Our compensation and benefits package is highly competitive and we encourage continual growth. Send resume and salary history to: AON SUBSIDIARIES, Human Resources, Attn: Technical Recruiter-CW, 5050 N. Broadway, Chicago, IL 60640. Fax: (312) 769-8705. EOE. Principals only, please. For additional information, visit our website at: http://www.aon.com

AON®

As Far As Your Mind Can Go.

OSPREY SYSTEMS is a Charlotte, North Carolina based consulting firm and SAP Regional Implementation Partner. Joins the most innovative minds in the world to develop revolutionary information systems.

We offer a competitive and comprehensive benefits package. Please send resume to:

Osprey Systems, Inc
9801 Arrowpoint Blvd
Suite 300
Charlotte, NC 28273
Tel: 704-672-1416
Fax: 704-672-1489

On line at: HTTP://WWW.VNET.NET/Osprey

Equal opportunity employer

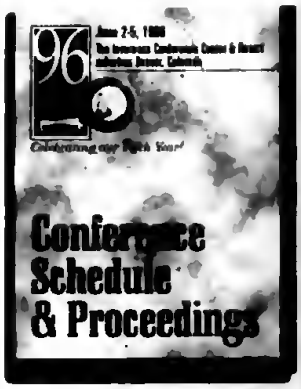
SAP CONSULTANTS
Abap
Functional
Basis

OSPREY

CONSULTANT consult with client to define need or problem, analyze data to advise on or recommend solutions, plan, develop, test and document computer programs utilizing IDMS, Cobol, CICS, SQL/DB2, Assembly, VMS, & JCL on an IBM mainframe, evaluate user requests for new or modified programs to determine feasibility cost and time required, formulate plans outlining the steps required to develop programs, prepare flowcarts and diagrams to illustrate the programs and to describe the logical operations involved, design computer terminal screen displays to accomplish the goals of the user, analyze, review and alter programs to increase efficiency or adapt them to new requirements, write user manuals to describe program development, installation and operating procedures, solve operating problems by locating the source of the problem and rewrite the program to correct errors. Four years college B S degree in Computer Information Systems required. One year experience in the position or one year as Computer Consultant and/or Teaching Assistant required. Experience in related position must include experience with Cobol, Assembly, SQL, DB2, JCL, CICS, and IBM Mainframe hardware. Must have taken one course in each of the following: Systems Analysis and Design, Advanced Cobol Programming, Database Management Systems and Assembler Language Programming. 40 hrs./wk, 8:00 a.m - 5:00 p.m., $41,000/year. Must have proof of legal authority to work permanently in the U.S. Please apply with resume in person to your local Kansas Job Service or send resume to: Department of Human Resources KS802137 Attn: Don Brumer, 401 S.W. Topeka Blvd., Topeka, Kansas 66603-3182

Software Engineer to consult with clients & define their user requirements & provide solutions, develop & customize computer software for financial & nonfinancial applications for various clients, develop financial application software including client & server development using PowerBuilder, SeQuel, to Platinum toolset, Visual Basic, Visual C++, ISQL on Sybase or Microsoft SQL Server database servers, implement software development life cycle (SDLC) by gathering, creating functional design specifications & detailed design specifications based on functional requirements, developing software based on design specifications & sending to quality assurance to test products; perform tuning for software applications to improve data access & retrieval, system administration of SQLServer & other file server related tasks. Reqs. Bach. in Comp. Sci. or Comp. Engg or its equiv., 2 yrs exp in job offered or 2 yrs related exp such as Sr. Software Engr. Related exp must include designing, developing, implementing & testing client server accounting software packages using Visual C++, ISQL, Visual Basic, SQL*Salvar, Sybase on MS Windows & Microsoft NT platforms. $47,500/yr, 40 hrs/wk 9a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #78496. "Employer Paid Ad"

Sr System Analyst design, implement & test Electronic Data Interchange (EDI) s/w used to exchange documents (PO, shipping notice, etc.) between entities on UNIX workstation in Client/Server X-Window environment using X11/Motif, TCP/IP tools & applying knowledge of EDI ANSI X12 standards & Value-Added Network (VAN) design, program & test code using X11/Motif, TCP/IP tools perform UNIX system administration, graphic user interface (GUI) programming, & image processing development. Req MA in computer sci. 3yr exp in job offered or related as s/w eng, related exp include 6mon in GUI programming & image processing development, 2.5yr in use of X/Motif, TCP/IP tools & UNIX sys administration. 40hr/wk, 8-5pm, $25.96/hr. Send resumes to 7310 Woodward Ave. Rm 415, Detroit, MI 48202. Ref. No. 80896. Employer paid ad



Learn Technical Recruiting from the Experts!

If you recruit Information Systems talent and want to get expert advice, you'll want to order the complete proceedings from **Computerworld's 1996 Corporate Technical Recruiting Conference**, held June 2-5 in suburban Denver. For just **$49** plus $3.50 for shipping and handling, you'll receive this 92-page book containing selected papers on subjects including proactive recruiting techniques, industry trends, advancing your career, applicant tracking systems, immigration, and reengineering. And all papers are written by experts, so you're sure to learn from top presenters in the field.

To order your copy, simply fax or send the coupon below. But hurry, because supplies of this one-of-a-kind tool are limited!

Fax this coupon to: 1-508-620-9430

Or send to: Computerworld, c/o Price Lampert Associates, 500 Old Connecticut Path, Framingham, MA 01701

❑ Please rush me the 1996 Conference Proceedings.
❑ I've enclosed my check for $49 + $3.50 for shipping & handling, or to pay by credit card please call 1-800-488-9204.

❑ Please ❑ send *or* ❑ fax me information about the **1997 Corporate Technical Recruiting Conference** to be held June 8-11, 1997 at the Marriott Rivercenter Hotel, San Antonio, TX.

❑ Please register me and send me an invoice.

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE _____ FAX _____

Excellent Growth Opportunities in Information Systems

Challenge

GE Lighting, a well established world-wide leader in the manufacturing and marketing of light bulbs, has a number of excellent career growth opportunities in information systems largely based at our global headquarters in Cleveland.

GE Lighting provides significant growth opportunities for system developers utilizing modern technology in several business disciplines. Most new opportunities are client-server and include

Customer Financial Applications (Project Leader) IS-AA

Provide leadership and technical expertise for the re-engineering of key financial systems to migrate from legacy to client server. Technical skills required include: COBOL, CICS, JCL and DB2 for IBM/MVS, PowerBuilder, Visual Basic, Oracle (or equivalent experience). Successful legacy to client server implementation experience is a plus.

Advanced Manufacturing Applications (Sr. Programmer/Analyst) IS-BB

Leverage information technology to enhance the world-wide cost and quality leadership of GE Lighting's manufacturing operations. Combine with pull-manufacturing techniques to drive continuous improvement in customer service and inventory control. Skills required include: Visual Basic, PowerBuilder, and Oracle.

Customer Service Systems (Sr. Programmer/Analyst) IS-CC

Drive improvements in GEL's Order/Ship/Bill process through the use of information technology. Develop applications in emerging technologies (Telephony, Document imaging, and Artificial intelligence) to improve customer service and call center productivity. Skills needed include: UNIX, C++, IDMS-DB/DC, ADSO, PowerBuilder, Visual Basic, Visual Voice, and Oracle.

Global Opportunities IS-DD

Other global opportunities currently exist in manufacturing, marketing, engineering and financial application development. Responsibilities contain a mixture of Project Leadership, analysis, design and programming. We provide extensive formal training and on-the-job experiences to create a highly motivated, high-powered information management organization.

Qualifications

We prefer developers with 2-5 years experience but have opportunities for highly motivated entry level personnel with client-server development experience using C/C++, MS Office or SQL in a Unix environment. Excellent interpersonal and technical skills with a strong desire to learn and grow and a proven record of achieving results.

Education: B.S. degree in Computer Science, Computer Information Management, Math or related field.

Replies

GE Lighting offers a competitive salary and benefits package. Please send your resume, indicating IS code of interest, to: GE Lighting, 1975 Noble Road, Bldg. 331, Cleveland, OH 44112.

GE Lighting

An Equal Opportunity Employer

POSITION AVAILABLE: TITLE Systems Analyst Information Engineering Facility (I.E.F.) Systems Developer. DUTIES: Analyzes user requirements, procedures, and problems to automate processing or to improve existing computer system. Confers with personnel of organizational units involved to analyze current operational procedures, identify problems, and learn specific input and output requirements, such as forms of data input, how data is to be summarized, and formats for reports. Utilizes the I.E.F. to write detailed description of user needs, program functions, and steps required to develop or modify computer programs. Review computer system capabilities, workflow, and scheduling limitations to determine if requested program or program change is possible within existing system. Studies existing information processing systems to evaluate effectiveness and develops new systems to improve production or workflow as required. Utilizes the I.E.F. to prepare workflow charts and diagrams to specify in detail operations to be performed by equipment and operations to be performed by equipment and computer programs and operations to be performed by personnel in system. Utilizes the I.E.F. to develop new information systems to meet current and projected needs. Plans and prepares technical reports, memoranda, and instructional manuals as documentation of program development. Utilizes the I.E.F. to upgrade system and correct errors to maintain system after implementation. Performs business area analysis, business systems design, program construction and implementation using the I.E.F. MINIMUM REQUIREMENTS: Bachelor of science degree in computer science, computer engineering, electrical engineering, mathematics or other area of major concentration appropriate to the position (or training and experience equivalent to such degree). Prior Experience: Two years prior experience in position(s) providing computer service(s) to either a child support enforcement agency, or a social service agency, or a government agency, in computer software development which include the following responsibilities: - Use of the information engineering methodology (I.E.M.) in a multi-entity environment to develop an information engineering facility (I.E.F.), - Use of Cobol, CICS, DB2, TSO/ISPF, JCL, QMF, SQL, OS/2, DB2/2, I.E.F. 5.2, C (computer) language, and - Use of IBM mainframe computer and PCs. STARTING SALARY: $60,000.00 per year for a forty-hour week. CONTACT THIS JOB ORDER NUMBER FOR THIS JOB OPPORTUNITY IS 376322. PLEASE APPLY IN PERSON OR SUBMIT A RESUME REFERRING TO JOB ORDER NUMBER 376322 TO: Ms. Shirley Gregory, Specialist, Alien Certification Unit, Missouri Department of Labor and Industrial Relations, Division of Employment Security, 1411 Main Street, Kansas City, MO 64105-2187.

A WORLD OF OPPORTUNITY

SDS has been a recognized leader in Information Technology for the past 8 years. Our continued success is based on our professional Staff and commitment to quality. Our Staff enjoys new challenges with various levels of responsibility while receiving above average salaries, outstanding benefits and 401-K. We currently anticipate 150% growth in all of our Carolina offices for individuals with any of the following skills:

ADA/Natural
APS, DB2
COBOL, CICS
IMS DB/DC
AS/400
EDI Gentran
IDMS, ADS/O
Ideal/Datacom
JD Edwards
Clipper/Delphi
Lotus Notes
SmallTalk
Oracle
S.A.P.
Sybase
PowerBuilder
UNIX

For immediate consideration send resume or call NOW!

SDS, Inc.
4500 Park Road, Suite 100
Charlotte, NC 28209
(704) 521-8877
(800) 521-8877
FAX (704) 521-8878

Join a team of professionals that...

SOLVES problems creatively & ENSURES quality results.

Creativity & Quality. They brought us to where we are today... and will take us to where we want to go tomorrow. We are Interim Technology (formerly Computer Power Group), a leading provider of consultative services in the information technology industry. We have achieved phenomenal success through creating unique service offerings that meet our clients' IT needs by creatively solving their technical problems.

As we take on more and more challenging projects for a growing number of prestigious clients, our commitment to innovation and quality remains the driving force behind all we do. That's why we are looking for ambitious, achievement-oriented professionals who share our standards. We have the following career opportunities available:

Business Analysts with experience in liaison roles, defining requirements, and a background in either Legacy or Client/Server technologies.

Software Developers with minimum 2 years experience in C, C++, Powerbuilder, NT, and Relational Database. Project Management experience a plus.

Programmer Analysts with Project Lead experience preferred. CICS, DB2, PL/1, COBOL, IMS DB/DC.

Sr. Test Analysts and Testers with either Mainframe or Client/Server experience. Knowledge of SQA, MERCURY, or QA Partner tools a plus.

UNIX/NT Systems Engineers. Strong background with large TCP/IP networks; UNIX/NT Administration (HP-UX, Solaris, AIX, SunOS, NT/AS); solid understanding of NFS, NIS, DNS, SMTP, SNA; Web Server and Internet connectivity experience is a plus.

Technical Writers with experience developing software manuals and on-line documentation. Strong communication and analytical skills necessary.

Contact our Staffing Specialists, 708/574-3030, Interim Technology, 823 Commerce Drive, Dpt. CW617, Oak Brook, IL 60521. FAX: 708/574-3076. EOE. Visit us on-line at www.interim.com

Interim® TECHNOLOGY

the consulting group

FORMERLY COMPUTER POWER GROUP

Systems Analyst

CHARLOTTE

Job #2161 · Hiring Rate: Negotiable

Plans/implements computer software applications; conducts analysis, design, development, support and maintenance of Customer Service Client/Server applications using C/C++, UNIX, Oracle 7.0, Java and/or Visual Basic, Navigator 2.1, PL/SQL, Oracle 7.0 databases; provides technical support to Customer Service Client/Server application which will be Inter/Intranet enabled, monitors/runs CRON jobs; maintains data feeds between mainframe and Client/Server application, participates in design/development of scripts in Shell and EDA/SQL and/or Perl for data conversion and database maintenance. Requires MS degree in Computer or Systems Science with two years relevant experience or equivalent BS degree and three years experience in the job duties; relevant course work includes Software/Information Engineering, Management Information/Operating/Database Management Systems, Object Oriented Programming, Software Development in C, UNIX, Windows and/or MOTIF.

Submit resume to: City of Charlotte, Human Resources Department, 600 E. 4th Street, Charlotte, N.C. 28202

Data Processing Specialist - Design & maintain environmental program computer systems & applications. Perform admin functions for Oracle & IBM/MVS mainframe databases; design & convert from mainframe to PC based Novell LAN using Oracle on Novell Server. Use SQL, ODBC, dBASE, Access & Paradox to develop applications. Conduct statistical analysis using SAS under IBM JCL & MS Excel on PC. Configure, install, maintain, & troubleshoot software, hardware, & peripherals. Provide support, consulting, problem-solving, & training for database & LAN/PC users. Req BS in Comp Sci/Comp Engr & 2 yrs exp in job offered or as Research Assistant/Programmer Analyst/Computer Consultant in job duties described above, using Oracle, SQL, ODBC, Paradox, Access, dBASE, SAS, Excel & JCL on MVS mainframe, PC DOS & Windows, & Novell networks, & 9 credits of college statistics courses. 40 hrs/wk, $33,259/yr. Must have proof of legal authority to work in the United States. Send your resume to D.E.S. Workforce Center, 215 Keo Way, Des Moines, IA 50309-1727. Please refer to Job Order IA1100520. Employer paid ad.

Systems Analyst. 40 hr/wk from 8am to 5pm. Salary at $51,000/yr. Visit client sites, design enhancements and custom modifications of software systems for manufacturing, distribution and sales. Require 2 years experience in job offered or as Programmer/Analyst. Must have worked on projects using AS/SET ADK, CL/400, RPG/400, SQL/400 and on ES/9000 MVS/ESA platform using DB/2 CICS, COBOL II, OS/2, ADW and XDB. Must have proof of legal authority to work permanently in the U.S. Please send resumes to Illinois Department of Employment Security, 401 South State Street-3 South, Chicago, Illinois 60605. Attention Brenda Kelly. Reference #V-IL 15212-K. An Employer Paid Ad. No Calls. Send 2 copies of both resume and cover letter.

MANAGER OF SYSTEMS DEVELOPMENT

Manage all systems development for the Department of Medicine. B.S. degree desired. Job requires experience in client-server development using Sybase System 10 and Powerbuilder 4.0 for Windows, Unix operating system, FoxPro and FOCUS report writing experience is preferred. Submit resume to: Director of Finance and Information Services, Dept. of Medicine, 545 Barnhill Drive, Indianapolis, IN 46202.

EO/AA Employer

INDIANA UNIVERSITY MEDICAL CENTER

DBAs

ROMAC specializes in the placement of Information Systems professionals in the Southeast region. Currently we have multiple permanent opportunities for DATABASE ADMINISTRATORS in the New Orleans area. Three plus years experience as a database administrator in ORACLE, SYBASE, or INFORMIX is required. Top salaries, benefits, and relo packages. ROMAC International - New Orleans. Fax (504) 524-5704

ROMAC INTERNATIONAL

IT PROFESSIONALS

Entergy, one of the nation's largest electric energy companies and a leader in the utilization of evolving technologies, is currently seeking world class professionals to join our organization. Positions require a BS in Computer Science, Mathematics, Engineering or equivalent work experience as well as excellent verbal and written communication skills.

Application Development (Multiple Positions)
Dynamic, state-of-the-art development environment involving client/server, object oriented and web-based technologies. Leading edge, multi-tiered Windows-based development using advanced RDBMS techniques through stored procedures, triggers and dynamic SQL. Preferred skills/experience include Powerbuilder, Java, HTML, Oracle, Sybase, NT SQL Server, C++, C, and Peoplesoft.

Progressive business analysis and design methods include use of emerging object oriented techniques and CASE tools in intense user worker sessions. Preferred skills/experience include Bachman, Codre Information Engineering methods, JAD facilitation.

Database Administrators
Responsible for the design, development and support of a heterogeneous, cross platform DBMS environment. Functions include: control block/component generation, database/gateway performance monitoring and tuning, logical and physical database design, database integrity verification, data access strategies and disaster recovery planning. SQL and relational theory a must. Experience with Sybase, ORACLE, or DB2 preferred.

Data Warehouse Administrators
Responsible for design, development and support of a heterogeneous, cross-platform Data Warehouse environment. Functions include: physical database design, programming database administration, and production support. Requires data modeling, SQL and RDBMS. Experience with CASE tools, C, COBOL, UNIX, MVS, DB2, Sybase or Oracle preferred.

Data Warehouse Designers
Responsible for logical data modeling, identification of source data, definition of extract conditioning and transformation logic, implementation of data subjects. Requires experience with RDBMS in relational theory, SQL, data modeling techniques and CASE tools. Exposure to Sybase, ORACLE and/or DB2 preferred.

Telecommunication Engineers
Requires a BSEE plus a minimum 5 years experience in planning, engineering design and fiber optic, microwave and other wireless telecom systems. Experience in utility industry a plus. Also have an immediate opening for a Senior Data Network Design professional (minimum BSEE or equivalent plus 5 years experience in router networks, TCP/IP and SNMP net management).

Please send or FAX your resume, including salary history to: **Entergy Services, Inc., Human Resources-CW0701, PO Box 61000, New Orleans, LA 70161; FAX (504) 576-4428.** Principles Only. EOE, M/F/D/V. You will not be contacted unless you are considered for an interview.

Entergy

Don't miss our home page at http://www.entergy.com

CDSI
Computer Data Systems, Inc.

Software Professionals

Computer Data Systems, Inc.® (CDSI) a premier information systems company has immediate openings for software developers, engineers, database programmers, quality assurance & configuration management analysts and other related positions. Specifically, the company provides government, defense and commercial clients with broad based consulting and engineering services, customer software development, systems integration, data center management, proprietary applications software, CASE tools and value added teleprocessing services. Most positions require a related BA/BS and skills and/or related exp. in one or more of the following:

Oklahoma City Oracle v7, COBOL, C, Natural/Adabas, FORTRAN, C++
Kansas City, MO (includes Omaha, NE & Quantico, VA area) Natural/Adabas, JCL, UNIX, FORTRAN, OS/2, SABRS training, Oracle Forms 4.5
New Orleans, LA COBOL, Unisys 1100/90, DMS/DMR, TIP, DPS, Mapper Programming Language, GIS, ARC/INFO, Oracle v7, Client Server, Intergraph, GUI
Denver, CO (includes Ft. Collins, CO; Salt Lake City, UT; Dugway, UT and Colorado Springs, CO area) C, C++, Visual Basic, FoxPro, UNIX, Vermont Views, Informix, PERL, HGML, Multi-Media, FOLIO, X Windows, Oracle v7, Help Desk, AutoCad
San Antonio, TX Sybase, Help Desk, Word Processing, Oracle DBAs, COBOL, Honeywell, Banyan Vine Administrators, USAF Samuel Edit System Specialists, UNISYS, Win-NT, C++, C, UNIX, LAN/WAN, Oracle v7, SAS
St Louis, MO SAS, Oracle DBAs, Oracle v7, Network Installation, UNIX Systems Admin, Help Desk/End-User Support

CDSI offers a competitive salary and a full benefits package. For consideration, send resume to CDSI, Attn: Kathy Culberson, Dept. 1285, 810 Houston St., Ste. 650, Fort Worth, TX 76102. Voice: (817) 332-6548 Fax (817) 335-3631

Internet: kathy.culberson102262.3447@compuserve.com

SOFTWARE ENGINEER/ SENIOR STAFF ANALYST. Job duties include: Identify user requirements in PC environments under Windows and DOS including client/server. Design, develop, implement and maintain software applications. Evaluate user requests for enhancements and modifications to existing applications. Analyze and develop specifications to determine feasibility, cost and time required to implement and determine compatibility with current system. Consult with user to clarify application objectives. Will include some real time embedded systems for 8/16/32 bit microprocessors utilizing electrical schematics, in circuit emulators and logic analyzers: all in C, C++ and assembly language. Minimum requirements: Bachelor's Degree in Computer Science or Electrical Engineering plus 3 years of experience in the job offered or in the related fields of Programmer Analysts or Software Engineering. The 3 years of related experience should be in PC environment under Windows and DOS, C, C++, (Win 16) & WIN32 SDK, Visual C++/MFC, FORTRAN, Power Builder, Visual Basic, Bar Code Scanners, OrCAD and AutoCAD. Salary $42,000 annually and 40 hrs./wk. from 8:00 a.m. to 5:00 p.m. Applicants must have proof of present legal authority to work in the United States on a full time basis. Applicants must send two copies of their resumes to M Brooks, JETS, P.O. Box 7972, Madison, WI 53702-7972. Reference Case No. 960169. Employer Paid Advertisement.

PROGRAMMER/ANALYST
Programmer/Analysts: Develop LAN-based client/server manufacturing systems. Work with manufacturing engineers to design and implement factory information and automation systems to collect data, schedule plant operations, track material consumption, perform statistical process control via programmable logic controllers and produce finished goods bar coding and shipping documents. Develop Executive Information Systems. Work with executive level management to design and implement real-time decision support systems which analyze data, identify problem areas, and forecast likely outcomes. Integrate these systems with E-mail backbones and rules databases to initiate basic decisions. Train users in the effective use of these systems, including client/server and local area network operations. Requirements: B.S. in Mechanical or Software Engineering or Computer Science plus 18 months experience in job offered or as Software Engineer. Experience must include: Continuous process manufacturing, statistical process control and forecasting in a cooperative computing environment, client/server programming, LAN operations and data communications, use of microprocessor operating systems (Windows NT, OS/2), microprocessor programming, Visual C/C++ or Basic, object-oriented programming (OOP), multitasking and re-entrant code integrated software packages, dynamic data exchange (DDE), dynamic link libraries (DLL), object linking and embedding (OLE), database design-entity and data modeling, open database connectivity (ODBC), standard query language (SQL), backup and recovery, data communications (SNA, HLLAPI, APPC) and messaging (MAPI, TAPI, etc.). 40 hr./wk. 8:00 a.m. to 4:30 p.m., $42,504/yr. Send resume with Social Security Number to Manager, Organization Development & Employment, Essex Group, Inc., 1601 Wall Street, Fort Wayne, IN 46802. Refer to this ad. Must be authorized to be permanently employed in the U.S.A.

Programmer Analyst (2 openings) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to client needs, analyze, design & develop computer software for clients EDP systems; analyze, design & develop integrated Taxation & Revenue Information Mgmt. System including process flow & data flow design, data modeling, identification, technical support & overall design of application entry part of the system modules, technical support for design of applications using client/server architecture on IBM AS/400, VAX/VMS, UNIX using IBM AS/400, VMS, DB2, C, C-ISAM, CLP, RPG, COBOL & CASE tool SYNON/2E. Reqs. Bach. in Comp. Sci., Electrical, Electronic or Comp. Engg., Systems Analysis, Comp. Info. Systems, Math or equiv. in ed. & exp. 2 yrs. exp. in job offered or 2 yrs related exp. such as Systems Analyst, Programmer, Software Engineer, Consultant, Software Consultant, Sr. Analyst, Assoc. Systems Executive or Systems Engineer. Will accept 3 yrs. college ed. plus 3 yrs exp. in job offered or related occup. in lieu of req'd ed. & exp. Must have some related exp. including analysis, design, development, testing & implementation of software products, analyzing business requirements, process & data flow design, database design & using AS/400, RPG/400, DB2, VAX/VMS, CASE SYNON/2E, COBOL, C-ISAM, CLP & UNIX. $46,500/yr., 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #78796. "Employer Paid Ad"

Firmware Engineer: analyze, design & debug embedded microprocessor s/w; perform analog & digital circuit design as required to interface embedded processor to its environment; participate in designing servo/stepper drive h/w used in manufacture of in-process balancing systems; perform h/w design & in-circuit test using Intel 8031/8051 microprocessor, Intel 8274 HDLC communication chip & assembler. Req. MS in computer sci. or Electrical eng. 2yr exp. as sys. eng. using Intel 8031/8051 programming using C++, MCS-51 assembler. 40hr/wk, 8-5pm, $865/wk. Send resumes to 7310 Woodward Ave. Rm. 415, Detroit, MI 48202. Ref. No. 70896. Employer paid ad.

Programmer Analyst (2 openings) to consult with clients to ascertain & define their business requirements or problem areas & utilize technical expertise to provide solutions to client needs, analyze, design & develop computer software for clients EDP systems, design, develop & Quality Assurance of CADRE (Customer Attendance Departmental Reporting Environment) system including system study designing modules, program specification preparation, development & testing, performance tuning, user training, implementation & documentation using SAA/CUA standards. Reqs. Bach. in Comp. Sci., Electrical, Electronic or Comp. Engg., Systems Analysis, Comp. Info. Systems, Math or equiv. in ed. & exp. 2 yrs exp. in job offered or 2 yrs related exp. such as Systems Analyst, Programmer, Software Engineer, Consultant, Systems Executive &/or Analyst Programmer. Will accept 3 yrs. college ed. plus 3 yrs exp. in job offered or related occup. in lieu of req'd ed. & exp. Related exp. must include design, development, program specification, user training & quality assurance of systems using CICS/VS, DB2, COBOL II, VSAM, IMS on IBM ES 9000 mainframe. $45,000/yr., 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #78896. "Employer Paid Ad"

Software Engineer to develop state-of-the-art capabilities & enhancements for Solid Modeling (Geometric Modeling) design software including computer-aided geometric design, feature based design & interactive computer graphics developed in C & C++, analysis/definition, software analysis/design, code construction, internal software documentation, software integration, bug fixing, software testing & quality assurance, utilize structured programming techniques in software development; develop geometrical/topological algorithms using Precise Boundary Representation (B-rep) solid modeler using Non-Uniform Rational B-Splines (NURBS). Reqs. Master's in Comp. Sci., 2 yrs exp. in job offered or 2 yrs related exp. such as Software Engr., Product Development Engr. or Programmer. Related exp. must include IDEAS solid modeling software development, analysis, algorithm design, program development, testing, bug correction. Must have exp. using NURBS geometric modeling, B-Rep, C, VAX/VMS & UNIX. $56,000/yr., 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #78396. "Employer Paid Ad"

COMPUTER CONSULTANT: Design, develop, test and implement billing systems software for a telecommunication company. Perform user requirements analysis. Support and maintain databases, database access, extract and purge modules. Bachelors in Computers, or related engg. field. Three years experience in offered position or three years experience programming in COBOL. Three years experience in offered or related position must include work with IBM Mainframe, IBM PC, MVS/JCL, OS/2, COBOL II, IMS DB/DC, Micrologus COBOL, File-Aid, IMS Expert, Lotus Notes and SQL. At least 8 months experience out of the three years, should involve billing systems for telecommunications industry. 40 Hrs./wk. $48,800/yr. Must have proof of legal authority to work in the United States. Send your resume to the D.E.S. Workforce Center, P.O. Box 729 (800 7th St. SE), Cedar Rapids, Iowa 52406-0729. Please refer to Job Order IA1100517. Employer paid advertisement.

Senior Analyst/Programmer - 40 hour per week 8:00 a.m. to 5:00 p.m. $55,000.00 per year. Software system design and programming. Engineering of large, complex database systems, problem solving. Program conversion, operation, research, system design and analysis with TCP/IP and related protocols. C/C++, Intel 8086 Assembler, PASCAL, Fortran. Conversion of Chinese legacy systems to modern client/server systems. Manage Asian programmers/project. Required: MS Computer Technology. One year experience with TCP/IP and related protocols, C/C++, Intel 8086 Assembler, PASCAL, Fortran. Fluent in Mandarin. Four years experience in Chinese information processing. Experience may be concurrent. Must have proof of legal authority to work permanently in the United States. Send resume to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street, 3 South, Chicago, Illinois 60605, Attn: Mary Miller, Reference # V-IL 14224-M. AN EMPLOYER PAID AD. NO CALLS - SEND TWO COPIES OF BOTH RESUME AND COVER LETTER.

Systems Analyst for software development & support on UNISYS A Series mainframes using Logic & Information Network Compiler (LINC), DMS II, COMS, COBOL; systems administration, customer support & maintenance for FURACS (software packages for retail furrier) written using PROGRESS on U6000; software development on PC WINDOWS platform using Xbase languages & GUI tools like PowerBuilder & using C & Shell scripts on UNISYS; user requirement & system analysis for new software projects, complete technical coordination of offshore projects. Reqs. Bach. in Comp. Sci., Comp. Engg. or equiv., 2 yrs exp. in job offered or 2 yrs related exp. such as Programmer &/or Systems Analyst. Related exp. must include designing, developing & maintaining software & systems using COMS, COBOL, DMS II, LINC, GUI tools, C, Shell scripts, UNIX & UNISYS A Mainframes. $44,000/yr., 40 hrs/wk, 8a-5p. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #79096. "Employer Paid Ad"

Computerworld's 1995-96 Salary Survey is Now Available on Disk!

What are other IS managers paying their staff?

Are you offering competitive rates?

Which industries are paying top dollar?

All this for just $299.

Answer these questions and more

with Computerworld's 9th Annual Salary Survey on disk, where compensation for 28 information systems positions is covered in 21 industries.

Plus!

The Disk also includes Computerworld's first survey ever on hot skills. Find out the premiums IS managers are willing to pay for specific IS skills. Which skills are in the highest demand? Which industries are willing to pay top dollar for them? You'll find over 60 technology skills listed which include development tools, languages, operating systems, networking and internetworking equipment, RDBMSs and more. All are broken out in 14 industries and in 12 metropolitan areas.

Call today! 1-800-495-0157

ResumesDirect

The Source Network For IS Professionals

HIRING NOW IN WASHINGTON D.C.!

RIGGS BANK NA

THE ARBITRON COMPANY

LONG & FOSTER REALTORS

THE AMERICAN CHEMICAL SOCIETY

MOORE BUSINESS COMMUNICATION SERVICES

COMPUTER ASSOCIATES INTERNATIONAL, INC.

ARLINGTON COUNTY VA GOVERNMENT

ORBITAL SCIENCES CORPORATION

ALL HARDWARE, SOFTWARE AND NETWORK POSITIONS

One Resume ▶ Multiple Opportunities

Fax: 800-417-7540

1040 Redbrook Road, Suite 340, Cincinnati, OH 45230

e-mail: resumes@resumesdirect.com web site: http://www.resumesdirect.com

CONSULTANTS-TRAINERS

Needed in Saudi Arabia in the following specialization:

- System Programmers
- System Analysts
- Programmers
- Database Experts
- Communication Network Specialists
- Documentation Specialists

Send full resume to:

Al-Tawali Management Consulting & Training
P.O. Box 9171 Riyadh 11413 Saudi Arabia
Fax: 966-1-479 0157

JMR Associates Inc

Contract & Perm Available
System Adm (HP-UX, AIX)
Sybase DBA
Programmers - COBOL, Natural, Pick, Visual Basic, PI/Open
PC Help Desk
Tech Writers

NACCB Member

Send Resume to Connie/CW
9417 Lackland Rd Overland MO 63114
1-888-429-ROSS (toll free)
(314)429-ROSS (314) 429-7600 FAX
DPIOBS2 @ aol.com

EOE 401 K/Benefits

PDG

Pacific Northwest

Pacific Data Group

We have a proven track record of systems integration and information services consulting. Our 9 years of double digit growth and market leadership is due to our strong ethics, skilled employees and ability to offer top pay.

PDG offers an attractive compensation and benefits package. For immediate consideration, mail, fax or e-mail your resume to: J. Pacific Data Group, Inc., 10300 SW Greenburg Road, Suite 230, Dept C, Portland, OR 97223.

Fax (503) 293-3898 Tel 503-293-2499
Internet recruiter@pacificdata.com
http://www.teleport.com/~pdg/
Equal opportunity employer

- DB2, CICS
- IMS DB/DC
- IDMS/DC
- COBOL, CSP
- Huron
- Powerbuilder
- Oracle V6/V7
- Oracle Forms
- Oracle Devel./Designer 2000
- Delphi
- Windows NT
- Visual Basic
- Access
- UNIX, C
- Windows Dev
- IEF ADW

TCI has challenging assignments NATIONWIDE. With over 300 systems specialists on staff, we are a leader in application outsourcing.

NEW PROJECTS

TCI is staffing several large in-house projects for companies nationwide. We are looking for individuals that have demonstrated skills that fit our needs and can work in a team environment. Positions include **DBAs, Data Modelers, Project Managers, Project Leaders, Systems Analysts, and Programmer/ Analysts.** We seek individuals who know or are eager to learn VISUAL C++, VISUAL FOXPRO, POWERBUILDER, DELPHI, ORACLE, and SYBASE. In addition to these, we are supporting mainframe clients utilizing IDMS/ADSO, Natural/Adabas, COBOL, DB2, and IMS DB/DC. If you have at least two years experience and are interested in challenging opportunities, please contact us.

For consideration send resume or call 800-829-4824

TCI TECHNOLOGY CONSULTING INC.

1800 Meidinger Tower, Louisville, KY 40202 FAX 502-589-3107
http://www.technologyconsulting.com

PSC

ARIZONA & COLORADO CONSULTING

OUR EXPERT MARKETS ARE OUR, WE NEED YOU TO KEEP US SHARP

We need highly motivated & career oriented consultants with at least 2 years experience in one or more of the following:

MAINFRAME
- SAS/COBOL
- DB2
- IMS
- CICS
- COBOL/WorkBench
- COBOL
- IMS or DB2 DBA
- QA Testers w/ COBOL

SUPERMINI/ CLIENT-SERVER
- MF
- SAP
- MS-Transaction
- Tandem
- INFORMIX/4GL
- Powerbuilder or Visual Basic
- C/C++
- Oracle or Sybase DBA
- Oracle Designer/Developer 2000
- Windows/Impromptu
- Oracle/Forms/Reports/Financials
- WEB Developers

Please call, mail or fax resumes to: Professional Software Consultants, Inc. ISO 2000/9000

4747 N. 7th St. 0424, Phoenix, AZ 85014, (800) 279-4495, Fax (602) 279-7161

8529 SFC Blvd. #400, Englewood, CO 80112 (303) 220-0978, Fax (303) 220-0918

Member NACCB

RYDER

TECHNOLOGY DRIVEN SOLUTIONS!

Ryder's explosive growth in the integrated logistics industry has created immediate opportunities for creative, customer-focused Information Technologists. As we redefine the leading-edge with innovative solutions designed to enable our customers to streamline their operations and reduce their costs, our IT team members are engaged in exciting global initiatives.

A Fortune 250 leader headquartered in beautiful South Florida, $5-billion Ryder views technological strength as a primary competitive advantage. Utilizing the very latest systems, and constantly enhancing our technology environments, we're intent on continuous quality improvement in all facets of our dynamic business. Be part of shaping the future of the booming logistics industry in one of these immediate openings:

DATA WAREHOUSING/DATABASE ADMINISTRATION/ DATA ADMINISTRATION

Using CASE tools and a variety of DBMS

APPLICATIONS DESIGN/DEVELOPMENT

Full software life-cycle development using a variety of tools including COBOL/DB2, IMS/DL/DC, Powerbuilder/Visual Basic, CA MIX/DBMS, RPG/III, GUI/Windows, etc.

TEAM LEAD/SYSTEM ANALYST

Full software life-cycle development with lead or senior analyst responsibilities

TECHNICAL SUPPORT

Variety of platform and levels of responsibility: IBM Mainframe, IBM Midrange, Client/Server/LAN, UNIX/AIX, LAN/WAN, Communications

PROJECT MANAGEMENT/METHODOLOGY

Planning and managing project and human resources to drive software projects.

TECHNOLOGY ASSESSMENT/ARCHITECTURE/MODELING

Enterprise wide assessment, research and integration of information technology

PROJECT/SOFTWARE IMPLEMENTATION/DEPLOYMENT

Deployment of new systems to support either internal or external customers.

Ryder is known as an employer of choice and offers superior compensation, generous benefits, including growth potential and relocation assistance. To find out more, please send resume to: **Ryder System, Inc., Dept. PG, 3600 NW 82nd Avenue, Miami, FL 33166.** An EOE. Drug testing is a condition of employment with Ryder.

For more details about our dynamic company, see our Internet Home Page at http://www.ryder.com/ryder

For additional opportunities available at Ryder, see our OCC Page at http://www.occ.com/ryder

Or see our Open House at http://www.careermosaic.com

COMPUTER AND COMMUNICATIONS

Technology Plus Bahrain is recruiting urgently for 30 consultant positions for a major oil company in the Arab Gulf for Communication Engineering and Year 2000 Projects.

Systems Analysts with experience in a combination of DB2, IMS, Cobol, PL1, Telon (a/plus) Endeavor

Client Server Analysts with experience in Powerbuilder and Oracle.

Communications Engineers with experience in the strategic planning of corporate networks or in the design and the installation of corporate Lan/Wan, PDS wiring, ATM video conferencing, routers, super-servers.

We offer excellent tax free salaries, free housing, medical insurance, expat-repat tickets, car allowance, etc

Please send your resume to:

CONI-TEL CANADA
Fax # 416-694-9679
Email # Conitel@aniq.com

CONSULTANTS

SEEK CONSULTING

SEEK OUT SEEK

- VC++, MFC, 4.0, NT
- VC++, MFC, OLE/ActiveX
- VC++, MAPI or TAPI
- C/C++, UNIX, Sockets
- C, System Level, Unix, Internals
- C, C++, UNIX, Testing
- C++, SNMP, MIB Development
- Windows Testing, QA Partner, MS-Test
- Database Architects
- PowerBuilder, APOL, Oracle/Sybase
- Oracle/Sybase DBA's
- Oracle, Developer/Designer 2000
- Visual Basic 4.0, Oracle
- Peoplesoft Implementations
- Oracle Financials
- Data Warehousing, RDB
- Intel, 80960, VxWork
- OOA, OOD, Architects
- SAP Base
- AS400, JD Edwards
- BIOS Specialists
- Firmware Developers
- RT Embedded, Intel 80960, VxWorks
- C, Assembly 68HC11 or 68302
- Cisco 7000 installations
- NT Device Drivers, VxD
- UNIX Device Drivers, SCSI
- HP Openview, SNMP, Network Management
- TDMA, CDMA
- Frame Relay, ATM, Network Design
- Sun System Administrators
- UNIX System Administrators
- ASIC Designers
- Analog/Digital Designers

Internet: http://seek-consulting.com

SEEK Consulting Group, Inc., Attn: Dept CW, 401 Edgewater Place, Suite 130, Wakefield, MA 01880; Phone: 1-800-274-1174; fax: (617) 246-8246

This Web site

e-mails
you with the
career opportunities
you want.

Register today and
use CAREERMAIL

http://careers.computerworld.com

itCareers.

Where the careers find you.

As a growing business needs to demonstrate its viability as a merchant vendor and business partner increase customer awareness of the Alpha family of products and PCI peripheral chips and support its sales channels. When began planning a seminar series to communicate their broad portfolio of semiconductor products to target customers she outsourced all registration and response components to Computerworld's Information Management Division.

In just four weeks full day seminars were held in nine cities nationwide provided inbound outbound telemarketing pre and post-seminar fulfillment in depth reporting even seminar kits. The payoff for Digital Semiconductor? A large target audience at every seminar and ongoing support for conducting a professional productive sales oriented program.

“With nearly 1,000 seminar attendees in all, we literally doubled our initial goal of 500 thanks in part to Computerworld's Information Management Division.”

Jackie Davis
Marketing Programs Consultant
Digital Semiconductor, A Digital Equipment Corporation Business
Hudson, Massachusetts

digital™

Targeted Market Exposure

"Our seminars offered sessions on Alpha microprocessors and PCI-based Ethernet, bridge, and graphics chips used in the development of boards and systems. So we focused on design engineers and engineering managers in our target markets. And that's exactly who we attracted — in large numbers.

"With nearly 1,000 seminar attendees in all, we literally doubled our initial goal of 500, thanks in part to Computerworld's Information Management Division. Their **registration and response management**, including 800#, BRC, and fax response mechanisms, ongoing follow-up, and timely reminders, played a crucial role in our registration success.

Comprehensive Service Support

"*Beyond useful* is the best way to describe the value adding afforded us by Computerworld's Information Management Division. Outsourcing of all registration and response components freed us to concentrate on developing the seminar content and managing logistics. And this partnership proved highly effective, as nearly 75% of all attendees gave seminar ratings of very good or higher.

"An **audience survey** qualified registrants by title, identified the information source, and generated lead sheets. Daily **activity reports** detailing registrations by site and source were invaluable in preparing for each seminar. For example, when one seminar had double the projected attendance, we were able to make adjustments for materials, seating, and food/beverage. What's more, working with Computerworld's Information Management Division gave us peace of mind. When we arrived in each city, we knew a package would await us with everything needed for that seminar — even name badges in alphabetical order. We also knew we'd receive up-to-the-minute information on the next-scheduled seminar.

Valuable ROI and Planning Tools

"By arming us with measurable feedback for validating the program's success to management, the in-depth reports generated by Computerworld's Information Management Division served as extremely valuable ROI tools. And, by helping us assess attendance trends and determine which marketing tools and databases pulled the best, they continue to provide important planning data.

A Continuing Partnership

"I can't say enough about the organization and professionalism that Computerworld's Information Management Division brought to our program. As a result of our first successful partnership, Digital Semiconductor has since selected Computerworld's Information Management Division as its literature fulfillment and response center for distributors worldwide."

A member of the IDG family, the world's leader in information services for IT, Computerworld's Information Management Division is your partner for improving sales and marketing results. To put our comprehensive solutions and unmatched customer service to work for your next seminar program, call:

1-800-780-8807

COMPUTERWORLD
Information Management Division

"With Computerworld's Information Management Division providing a total turnkey solution, our seminar series played a definitive role in closing seven customers with potential sales totaling over 1,000 notebooks – all within the first 90 days."

MICHAEL DAVIS
SALES PROGRAMS OPERATIONS DIRECTOR
PERSONAL PRODUCTIVITY PRODUCTS, TEXAS INSTRUMENTS
AUSTIN, TEXAS

TEXAS INSTRUMENTS

Targeted Market Exposure

"Our goal was to attract department/line managers and IS managers in Forbes 500 companies, and our seminar audience was 90% right on target. Computerworld's Information Management Division was instrumental in helping us define invitees and select the most productive database sources.

Comprehensive Service Support

"From start to finish, the level and quality of service provided by Computerworld's Information Management Division was outstanding. The **direct mail invitation** met all our expectations — in look, feel, and approach from the very first mock-up. Even our ad agency said, "Don't change a thing." By profiling attendees, the **audience survey** helped us personalize the seminars and will prove valuable in evaluating future efforts as well.

"**Registration and response management** was excellent, providing timely information to prospective attendees, convenient registration via fax and BRC, and crucial follow-up. The comprehensive **activity reports** gave us everything we needed — plus more. For example, everyday we knew the exact counts for each site. This value-added reporting fully prepared field sales for each event. And professional, responsive **on-site management** created the right environment for delivering our message.

Powerful Sales Environment

"With Computerworld's Information Management Divisioo providing a total turnkey solution, our seminar series played a definitive role in closing seven customers with potential sales totaling over 1,000 notebooks — all within the first 90 days. These seminars not only provided the very first contact for a oumber of prospects who have since become customers, but also expedited the sales process for several deals already in the works. More than one participant even postponed a pending purchase to evaluate Texas Instruments' product line.

Measurable ROI ... Bottom-Line

"We've calculated the number of units oeeded to achieve our ROI goal, and we're right on track. Given the long sales cycle typically associated with major accounts, we see this as a building process that will continue generating sales down the road. Meanwhile, with our field sales force requesting additional exposure, we're sponsoring an expanded 13-city seminar program in Q1 1996. Based on our initial success, we'll rely on the same ROI strategy for this new roll-out — a turnkey seminar solution from Computerworld's Informatioo Management Division."

A member of the IDG family, the world's leader in information services for IT, Computerworld's Information Management Division is your partner for improving sales and marketing results. To put our comprehensive solutions and unmatched customer service to work for your next seminar program, call:

1-800-780-8807

COMPUTERWORLD
Information Management Division

Marketplace

Notes add-ons face subtraction

By Steve Alexander

As Lotus Notes' market penetration increases, opportunities continue to grow for vendors that sell add-ons to Notes. But all is not rosy for these 4,000 small vendors of software packages that expand the capabilities of Notes. Several converging forces seem likely to force a consolidation among them.

There are no reliable estimates of the size of the Notes add-on market. Lotus Development Corp. in Cambridge, Mass., unofficially estimates that every dollar of Notes revenue generates $4 to $6 worth of additional revenue for Notes add-ons, consulting, integration and training.

"Customers buy third-party add-ons because [the add-ons] do things Lotus Notes hasn't provided or do something Notes already does, but better," says Tim Sloane, director of messaging at Aberdeen Group, Inc., a consultancy in Boston. Lotus sells some Notes add-ons, but most come from third-party vendors.

Some of the most popular third-party applications are software for data integration between Notes and databases, application development tools and workflow software. Other popular choices are administration and management tools and vertical and horizontal software for applications such as legal, insurance, manufacturing, sales force automation and document routing, says David Marshak, vice president and senior consultant at Patricia Seybold Group, a market research firm in Boston.

"Many of the add-ons come out of consultancies who are generalizing a product they did for a specific customer," Marshak says.

Analysts say consolidation of those smaller vendors seems likely partly because they have difficulty making themselves known to Notes users. Their only sales channel is a marketing-partner arrangement with Lotus.

> "Third-party product life cycles may be only six months or less."
>
> – David Marshak, consultant, Patricia Seybold Group

"What isn't out there is a really mature sales channel to deliver Notes add-ons from these generally very small companies to the diverse group of Notes customers," Marshak says. "Right now, when you get Notes, you get a book of 12,000 Lotus Notes partners [including about 4,000 third-party add-on vendors.] That lack of visibility to customers could cause a shakeout."

Holding back

Lotus officials say the company seeks to help third-party suppliers succeed through joint advertising, seminars and trade show exhibits. But they add that Lotus tries to maintain a no-recommendations policy regarding which third-party companies are best at what they do. Now, though, Lotus is restructuring its list of third-party add-ons; novice firms won't be allowed on the list until they demonstrate a certain level of proficiency.

And beginning in July, Lotus and Stream International, Inc. in Norwood, Mass., will operate an Internet storefront for Notes called the Notes Store (www.notesstore.com). The site will provide links to third-party developers.

Some analysts point out another barrier to selling through the Lotus sales channel: Notes marketers tend to oversell their product and turn to needed third-party applications later.

"What hinders third-party applications from gaining a strong foothold is that the marketing for them is not as tightly integrated with Notes sales as it could be," says Ian Campbell, director of collaborative computing at International Data Corp., a market research firm in Framingham, Mass.

Another factor that could lead to consolidation is the surplus of competitors in some application niches.

"In the database connectivity space, there are six good vendors besides Lotus who can integrate a SQL database with Notes. But that's too many companies in that segment unless Lotus sells more copies of Notes," Campbell says.

Still another force that favors consolidation is the growing capability of Notes itself. As Lotus steadily adds more functionality to Notes, the life cycle of third-party add-on products is growing shorter.

"Now that Lotus is developing products in less time in reaction to the World Wide Web phenomenon, staying ahead of Lotus is very difficult. Third-party product life cycles may be only six months or less," Marshak says. ■

Alexander is a freelance writer in Edina, Minn.

INTERNET IMPACT

Another issue that faces Notes – competition from the Internet – will be good news for Notes add-on firms in the short term, analysts say. That's because there's likely to be growing demand for Internet-related Notes add-ons.

"The Notes Domino server product [now in beta testing] is integrating more and more Internet technology into Notes," says Bob Flanagan, director of Internet-computing strategies at The Yankee Group in Boston. "If you combine that with the fact that Lotus Notes is experiencing healthy growth this year, and that the growth rate of Internet and Intranet applications is exploding, there will be more opportunity for Notes add-on vendors."

But in the longer run, it's unclear what impact the Internet and Intranets will have on the Notes add-on market. So far, Notes hasn't been hurt much by Internet competition. Analysts say the only lost sales may be low-end applications among users who opted to use Internet electronic mail for communication instead of Notes. But that could change.

– Steve Alexander

COMPUTERWORLD MARKETPLACE VENDOR CENTER

(800) 447-0018

Software
3780 RJE Emulation ..... ext. 517
Client/Server Development Tools ..... ext. 509
Groupware ..... ext. 511
Network Management ..... ext. 512
Remote Access ..... ext. 513
Terminal Emulation ..... ext. 510

Computers/Peripherals
Back-up/Tape/Disk ..... ext. 216
Cabinets/Racks/Furniture ..... ext. 220
Desktop PC's ..... ext. 201
Kiosks ..... ext. 217
Mainframes ..... ext. 215
Mid-range ..... ext. 219
Monitors ..... ext. 212
Presentation Project/Panels ..... ext. 205
Repair & Maintenance ..... ext. 221
Security ..... ext. 218
Workstations ..... ext. 203

Networking/Communications
Client/Server Tools ..... ext. 603
Diagnostic/Testing Equipment ..... ext. 629
Groupware ..... ext. 606
Internet Products/Services ..... ext. 634
Network Hardware ..... ext. 619
Network Management ..... ext. 607
Network Software ..... ext. 610
Remote Access ..... ext. 633
Security ..... ext. 632
Storage/Cabinets/LAN Racks ..... ext. 615
TCP/IP ..... ext. 626
Windows NT ..... ext. 617

Services
Consulting/Contract Programming ..... ext. 703
Conversions ..... ext. 707
Data Recovery ..... ext. 708
Outsourcing/Remote Computing ..... ext. 706
Training/Software Support ..... ext. 704
Large Systems Outsourcing ..... ext. 709

Internet/Intranet
Application Development Tools ..... ext. 330
Browsers ..... ext. 305
Consulting ..... ext. 308
Security ..... ext. 322

Premier Solutions

Beacon™ 2500

$6,499

500 Lumens!

The new standard for brightness and value in conference room LCD projectors!

- True 500 ANSI Lumens!
- Auditorium or full room light use!
- Remote power Zoom & Focus
- 2 PC inputs, 2 video, 4 audio

"Boxlight sells more electronic projection systems, to more people than anyone. Call to find out why."

ColorShow™ 2000+

ONLY $3,999

The first, and still the only TFT active-matrix projector you can buy for under $4,000!

- Sleek, compact & stylish design
- Less than 20 lbs travel weight
- Includes free remote control

Limited Time! $1,999

ProColor™ 1301

TFT Active Matrix Color for under $2,000

- Save $1,000 on our Best Seller!
- Lightweight, reliable, rugged design
- Mac or PC, optional video & audio
- Easy-menu, zoom, freeze, pointer

As the most trusted name in Presentation Electronics,™ we offer:

- Dialog with knowledgeable people who really help
- More than 50 models to choose from, available now
- Overnight shipping to multiple world-wide locations
- Money-back 30-day guarantee
- Free lifetime tech support

Monday through Friday, 6am — 5pm, Pacific Time. Purchase orders accepted (some restrictions). Prices subject to change. Quantities may be limited to stock on hand.

#1 For Rentals

Call BOXLIGHT today 1-800-762-5757

BOXLIGHT™ DIRECT

Government: (800) 497-4009
Resellers: (800) 736-6956
International: (360) 779-7901

Rental: (800) 736-6954
Fax: (360) 779-3299
Education: (800) 689-6676

The Inc. 500 logo is a registered trademark of Goldhirsh Group, Inc.

http://www.boxlight.com

Kablit™ Security

NOW!

STOP COMPUTER THEFT

IN THE OFFICE — ON THE ROAD

- Secure computer or notebook to desk, table, etc.
- Protect data
- Lifetime warranty

Padlock Security Provided by Master® Lock

Quick And Easy To Install!
Compact — Lightweight!
Available For Macintosh Computers Too!

TOUGH UNDER FIRE

Order Now — Call 800-451-7592

Secure-It

10 Maple Court, East Longmeadow, MA 01028, USA 413-525-7039

The particular Master® Lock Trademarks used are trademarks of the Master® Lock Company and are used by Secure-It, Inc. under license.

GET HELP!

Mainframe • AS/400 • Client/Server

- Data Center Facilities
- Remote Support
- Networking
- Desktop
- Technical Assistance
- Internet

AmQUEST

Amquest, Inc.
470 East Paces Ferry Road
Atlanta, GA 30305

YOUR PARTNER IN MANAGING INFORMATION TECHNOLOGY

Your best choice for mainframe computing services

REMOTE COMPUTING

Extensive Software Library
Adventis Compuserve Tymnet Internet and WWW Services
Year 2000 Conversion/Testing Platform
Extraordinary Customer Service
Complete Migration Management
info@faneuil.net

MVS/ESA IMS/DBDC
VM/ESA CICS SAS
VSE/ESA TSO DB2

708-574-3636
815 Commerce Drive, Oak Brook, IL 60521

FANEUIL SYSTEMS

PLACE

Hardware • Buy / Sell / Lease
Services • Classified Solutions

ALICOMP/CBS
A Unique Outsourcing Services Provider

OUTSOURCING • REMOTE COMPUTING

TRANSITIONAL AND LONG TERM CUSTOM SOLUTIONS
VM • MVS • VSE 105,000 sq.ft. SECAUCUS, NJ COMPLEX

"OUR PLATFORM IS CUSTOMER SATISFACTION"

SERVING CLIENTS SINCE 1969

800 274-5556 • 201 319-8787

COMPUTER RACKS

Call 1-800-434-3746

GETTING PRODUCT INFORMATION JUST GOT EASIER!

All you need is your phone, and your issue of Computerworld. Turn to the Computerworld Marketplace Vendor Center at the beginning of this section and dial 800-477-0018.

IT'S FREE AND EASY TO USE!

ENTERPRISE CONNECTIVITY with NIDERA 2000

direct channel-attached multi-protocol converter/controller.

Mainframe LAN
Local & Remote ASCII Access
Dial-Up Gateway

- Block or Byte Channel Attached.
- Up to 256 Async Ports/16 LANs.
- SNA and Non-SNA Gateway PU.
- Modular Design for Easy Expansion.

1-800-554-9372
http://www.jdsm.com

IBM

- ES/9000
- SERIES/1
- AS/400
- RS/6000
- SYSTEM/88
- ... and more!

New & Used

- *Computers*
- *Peripherals*
- *Upgrades*

Buy · Sell · Rent · Lease

SPECTRA
(800) 745-1233
(714) 970-7000 (714) 970-7095 Fax

Anaheim Corporate Center
5101 E. La Palma Ave., Second Floor
Anaheim, CA 92807

amdahl
Cisco
Concurrent
Data General
DIGITAL
HEWLETT PACKARD
Sun
TANDEM
UNISYS
XEROX

Advertisers Index

Advertiser	Address
Alicomp/CBS	(800) 274-5556
Amquest Inc.	http://www.amquest.com
Boxlight Direct	http://www.boxlight.com
Computer Hardware Resources Inc.	http://www.chrhq.com
Faneuil Systems	http://www.faneuil.net
Hergo	(800) 434-3746
ISC Corp	(800) 298-1336
JDS Microprocessing	http://www.jdsm.com
Secure-It	http://owls.com/secure-it/index.html
Spectra	(800) 745-1233
Trinitech Inc.	(800) 909-3434

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

PC DIAGNOSTICS
OmniPost Analyzer
The only 3 in 1 tool:

1. IRQ and DMA conflict detection
2. Self-booting Diagnostics
3. Enhanced Power-On-Self-Test

- Works on Win95, Novell, DOS, Unix, OS/2
- Test XT, AT, ISA, EISA, VESA, PCI, PS/2 25 and 30
- 8- and 16-bit Hardware analyzer.

Call for FREE Diagnostic Software.

TriniTech, Inc.
1-800-909-3424

DOUBLE Your Purchase Power!

We sell and lease refurbished
STRATUS
WYSE
TELEVIDEO
DEC
IBM
at HALF the price of new

800-410-6161

Computer Hardware Resources, Inc.
www.chrhq.com

The Year 2000 is Near, Convert Your Applications!!!

We offer:

- Full Conversion Strategy
- Assessment/Planning
- Supervision/Conversion/Testing
- Flat fee, low rates
- Off Site Development
- Automated Tools, Human Resources
- Specialized COBOL Technicians
- Previous Experience Year 2000 Conversions

You take care of your business, we'll take care of the conversion! Don't wait until 1999. Call us now for a FREE plan.

ISC Corp. Rye, New York (800) 298-1336

Is Your Company Listed in the Computerworld Internet Resource Directory?

If not, no need to worry! *COMING IN SEPTEMBER* - an all new, updated version of the Computerworld Internet Resource Directory. Call today for your fall 1996 Internet Resource Directory Packet! Deadline: July 26, 1996

FOR DISPLAY AND LISTING ADVERTISING RATES CALL YOUR SALES REPRESENTATIVE BELOW

- **HEADQUARTERS:**
  Computerworld Marketplace
  500 Old Connecticut Path
  Framingham, MA 01701
  800/343-6474
  Fax: 508/820-0941
- **MARKETPLACE SALES MANAGER**
  Michelle Reeves, ext. 8197
  Internet:michelle_reeves@cw.com
- **NORTHEAST/EASTERN CANADA**
  Laurie Gomes, ext. 7759
  Internet: laurie_gomes@cw.com
- **CENTRAL & SOUTHEAST**
  Ann Meleney, ext. 8196
  Internet: ann_meleney@cw.com
- **WEST/WESTERN CANADA**
  Claude Garbarino, ext. 6313
  Internet: claude_garbarino@cw.com
- **WESTERN SALES OFFICE**
  Computerworld Marketplace
  500 Airport Blvd., Suite 400
  Burlingame, CA 94010
  415/548-5544
  Fax: 415/343-5023

Find the Spring '96 Computerworld Internet Resource Directory On-line at www.computerworld.com/techcity

COMPUTERWORLD
Everything you need to know

Advertisers Index

Advanced Logic Research 55
http://www.alr.com

Amdahl 15

Command Tech 25

Computer Associates 22-23
http://www.cai.com

Compuware 26-27
http://www.compuware.com

Digital Equipment Corp. 36-37
http://www.digital.com

EMC Corp. 56
http://www.emc.com

Hewlett-Packard 38
http://www.hp.com

Hitachi PC 29
http://www.hitachipc.com

IBM 42, 46-47, 58-59, 91
http://www.ibm.com

Informix Software 18-19
http://www.informix.com

JD Edwards 24
http://www.jdedwards.com

Lotus Development Corp. 92
http://www.lotus.com
(800) 343-5414

Micro Focus 7
http://www.microfocus.com
(800) 872-6265

Micron 88
http://www.micron

Microsoft 11, 30-31
http://www.microsoft.com

Motorola 50-51, 67
http://www.motorola.com

NetManage 60
http://www.netmanage.com

Oracle Corp. 5, 9
http://www.oracle.com

Peoplesoft 17
http://www.peoplesoft.com
(800)947-7753

Red Brick 10
http://www.redbrick.com

SAS Institute 21, 62
http://www.sas.com

Softbank Expo 40

Sun Microsystems 52
http://www.sun.com

Syncsort 3
http://www.syncsort.com

Unisys 13
http://www.unisys.com
(800 874-8647X100

Workstation Group 49
http://www.wrkgrp.com

To have your Internet address listed here, please contact Paula Wright at (508) 626-7716

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions

Have a Problem With Your Computerworld Subscription?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

COMPUTERWORLD, P.O. Box 2043, Marion, Ohio 43305-2043.

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line

Your New Address Goes Here Address shown: ❑ Home ❑ Business

Name

Company

Address

City State Zip

Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: **1-800-669-1002** (Outside U.S. call (614) 382-3322). CompuServe members can reach us at account number 73373, 1230. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address - COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701

Name
Title
Company
Address
City
State
Zip

Computerworld, Inc.

CEO/President Gary J. Beach
Executive Vice President Steven F. Wolf
Senior Vice President/Finance Matthew C. Smith
Vice President/Human Resources Susan C. Perry
Executive Assistant to the CEO/President Karen E. Elliott

Computerworld

An IDG Company: The World's Leader in Information Services on Information Technology

Publisher
Kevin McPherson

Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171, Framingham, MA 01701-9171
Phone: 508-879-0700, FAX: 508-875-4394

Editor Paul Gillin
Vice-President Sales/Associate Publisher David Peterson
Vice-President Marketing Bob Winter
Vice-President Consumer Marketing Gail Odeneal

PUBLISHER'S OFFICE: *Assistant to the Publisher*/Lois Beninati **MARKETING**: *Director, Marketing Communications*/Mary Doyle, *Senior Manager, Marketing Communications*/Elizabeth Phillips, *Manager, Trade Show & Conventions*/Audrey Abbott, *Marketing Manager*/Susan Thaxter, *Marketing Communications Project Manager*/Karen Leslie, *Marketing Specialist*/Emily Dinneen, *Administrative Assistant*/Patty White **CIRCULATION**: *Director of Circulation Management*/Maureen Burke **PRODUCTION**: *Production Director*/Christopher P. Cuoco, *Production Manager*/Beverly Wolff **SALES CLASSIFIED**: *Classified Operations Director*/Cynthia Delany **DISTRIBUTION**: *Distribution Manager*/Bob Wescott, *Traffic Manager*/Pat Walker **INFORMATION SYSTEMS**: *Vice-President of IS*/Walter Crosby

Sales Offices

Associate Publisher/Vice-President/Sales
David Peterson
Computerworld Headquarters: 500 Old Connecticut Path, P.O. Box 9171 Framingham, MA 01701-9171
Phone: 508-879-0700, FAX: 508-879-0446

Regional Vice President: Sherry Driscoll, Senior District Managers: Bill Cadigan, John Watts, Sales Office Coordinator: Tammy Boisvert, Sales Assistants: Cheryl Stratton, Barbara Shuman, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (508) 879-0700 FAX: (617) 890-2669 Hearing Impaired: (800) 428-8244

Mid-Atlantic

Senior District Managers: Fred LoSapio, Vicki Gonin, Mike Bachman, Sales Assistants: Susan Rustic, Jean Deffarobba, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 FAX: (201) 712-9786 Hearing Impaired: (800) 204-0288

Regional Vice President: Bernie Hockenender, Sales Assistant, Jennifer Pattenaude, 1565 Woodington Circle, Suite 201, Lawrenceville, GA 30244 (770) 931-8104 FAX: (770) 931-8106 Hearing Impaired: (800) 449-4974, Senior District Manager: Mike Bachman, Sales Assistant: Mary Cavaliere, 175 Strafford Ave. #1, Wayne, PA 19087 (610) 975-4581 FAX: (610) 975-4582

Midwest

Senior District Manager: Sharon R. O'Brien, Sales Assistant: Denice Richards, 980 N. Michigan Avenue, Suite 1400, Chicago, IL 60611 (312) 214-3606 FAX: (312) 214-4962

Boston: Vice President/Larry Craven, Director of Publishing Services/Carolyn Medeiros, Project Coordinator/Heidi Broadley, Managing Editor/Peter Bochner, Graphic Designer/Gail Variney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 875-6310

San Francisco: West Coast Director/Elaine R. Offenbach, Sales Associate/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-6555 FAX: (415) 347-8312

Associate Publisher: James Hussey, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 FAX: (508) 872-2264
East: Don Calamaro, 1656 Windsor Park Lane, Havertown, PA 19083 (610) 446-5372 FAX: (610) 446-5253
West: Sharon Chin, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-6555 FAX: (415) 347-8312

Sales Manager/Michelle Reeves, Sales Assistant/Christine Tenneson, **Northeast** Account Executive/Laurie Gomes, **Central/Southeast** Account Executive/Ann Mehlenry, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474 FAX: (508) 626-0941
Western Account Executive/Claude Garbarino, 500 Airport Blvd., Suite 400, Burlingame, CA 94010 (415) 548-5544 FAX: (415) 343-5023

Vice President/General Manager: Richard Mikuta, Vice President, John Carpenter

Computerworld VAR Database: Carol Mullen/ National Sales Manager, Account Executive/Sean Weglage (508) 879-0700 FAX: (508) 879-0184

Computerworld Buyers Database East: Regional Manager, Database Services/Linda Clinton, (508) 879-0700 FAX: (508) 879-0184

Computerworld Lead Management: Eastern Regional Manager/Phil Lampert, Central Regional Manager/Tim Hinds, (508) 879-0700 FAX: (508) 626-0547; Western Regional Manager/Gena Haas, (415) 347-6555 FAX: (415) 347-8312

Senior District Manager: Darren Ford, Sales Assistant: Brenda Shipman, 14651 Dallas Parkway, Suite 304, Dallas, TX 75240 (214) 233-0982 FAX: (214) 701-9008 Hearing Impaired: (800) 822-4918

Vice-President Western Advertising Sales: Richard Espinosa, Senior District Managers: Ernie Chamberlain, Kaye Sharbrough, Linda Holbrook-Dussy, Christine Curry, District Managers: Elizabeth Cooper, Lisa Kowalski, HR Representative: Leticia Lehane, Operations Manager: Denise Hid, Sales Associate, CSJ: Shannon Dempsey, Sales Associates: Emily Gaytan, Andrea Zurek, Patricia Keller, Emmie Hung, Amy Blechman, Nancy Dillon, Office Services: Jessica Abode, Sales Coordinators: Catherine Weber, Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-6555 FAX: (415) 347-8312 Hearing Impaired: (800) 900-3179

District Manager: Nancy Coy-Bunchs, Sales Associate: Pat Dahl, 2171 Campus Drive, Suite 300, Irvine, CA 92715 (714) 250-3942 FAX: (714) 476-8724

Display Advertising Production Manager: Paula Wright, Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508) 879-0700 FAX: (508) 879-0446

Vice President/Recruitment Advertising: John Corrigan, Marketing Director/Derek E. Hulitsky, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

New England: Regional Manager/Nancy Percival, 470 Totten Pond Rd., 5th Floor, Waltham, MA 02154 (800) 343-6474, Account Executive/Nancy Mack, (800) 343-6474

Mid-Atlantic: Regional Manager/Marty Finn, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090, Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 204-0288

South-Atlantic: Regional Manager/Katie Kress, 8304 Professional Hill Drive, Fairfax, VA 22031 (703) 573-4115, Sales Manager/Pauline Smith (800) 343-6474

Midwest: Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Sr. Account Executive/Ellen Cross (800) 343-6474 TDD: (800) 227-8437

West: Regional Manager/Barbara Murphy, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Sr. Account Executive/Christopher Glenn (800) 343-6474 TDD: (800) 203-5867

Internet Careers Sites: Jay Savell, Account Executive, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

National Accounts Director/Norma Tamburrino, Sales Associate/Christine McGovern, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090

Chairman of the Board, Patrick J. McGovern, **President**, Kelly Conlin, **Chief Operating Officer**, Jim Casella

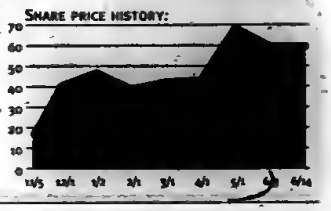
Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 200 computer publications in 63 countries. Forty million people read one or more International Data Group publications each month.

Finance & Investing

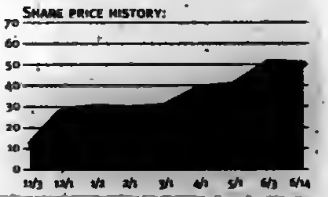
And they're off

Track records of selected IPOs within the past eight months

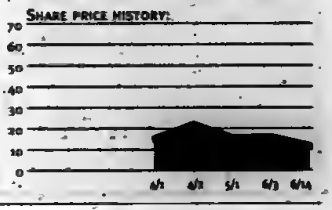
Arbor Software Corp. (Nasdaq:ARSW)
Develops client/server software for online analytical processing and multidimensional databases for business planning analysis.
Initial offering date: Nov. 5, 1995
Initial offering price: $17
1995 revenue: $25.1M



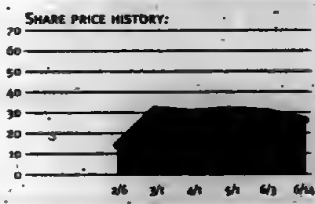
Clarify, Inc. (Nasdaq:CLFY)
Develops customer service and help desk management software.
Initial offering date: Nov. 3, 1995
Initial offering price: $13
1995 revenue: $20.9M



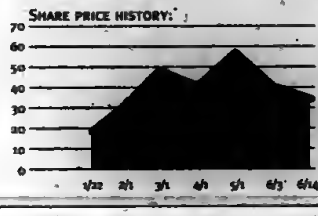
Lycos, Inc. (Nasdaq:LCOS)
Internet search engines and tools.
Initial offering date: April 1, 1996
Initial offering price: $16
1995 revenue: Not yet available*



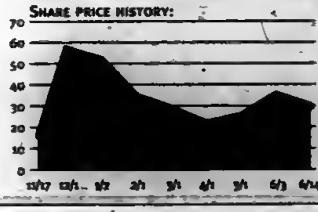
Raptor Systems, Inc. (Nasdaq:RAPT)
Makes network security products for the Internet, intranets, LANs and mobile networks.
Initial offering date: Feb. 6, 1996
Initial offering price: $15
1995 revenue: Not yet available*



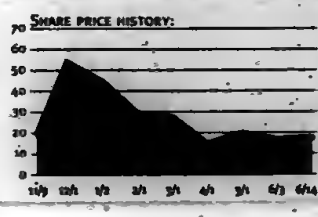
Red Brick Systems (Nasdaq:REDB)
Provides relational database products and services for data warehouse applications.
Initial offering date: Jan. 22, 1996
Initial offering price: $18
1995 revenue: Not yet available*



Secure Computing Corp. (Nasdaq:SCUR)
Provides Internet firewall products and network security products for identification and authentication of remote users.
Initial offering date: Nov. 17, 1995
Initial offering price: $16
1995 revenue: $20.7M



Sync Research, Inc. (Nasdaq:SYNX)
Supplier of frame-relay and WAN products for merging multiprotocol data traffic.
Initial offering date: Nov. 9, 1995
Initial offering price: $20
1995 revenue: $23.2M



IPO fever continues

By Stewart Deck

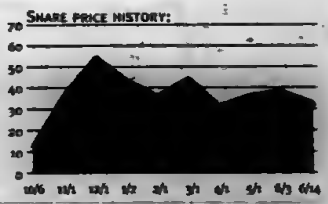
A look at the first half of 1996 shows that Wall Street's appetite for networking and Internet initial public offerings (IPO) hasn't been sated. IPOs in high tech hit a high last year, raising over $8.5 billion in capital. Internet access companies and internetworking vendors led the way. If this year's pace keeps up, more than $10 billion will be raised in new technology issues — a new record, says Richard Peterson, an analyst at Securities Data Co. in Newark, N.J.

Recent offerings are following the pattern of most high-tech IPOs. They typically ride the hyperbole of brokers and underwriters and make a big splash during the first weeks of public trading, Peterson says, rising as much as 20% in the first month. After these quick gains, the stock price often settles down and levels off. The company "then has to stand on its own merits with products, execution and financial results," he explains.

Analysts say the timing is right for Internet-related companies to go public. Ryan Jacob, director of research at IPO Value Monitor in New York, says investors are buying almost anything with an Internet angle, regardless of size. "There's a real appetite for Internet stocks, so it's a great time for Internet companies to go public," Jacob says.

Peterson concurs that Internet-related companies in particular are taking advantage of investors' hunger. These firms "are taking advantage of the buoyant equities market," he says. "And if they can, more power to them."

Verity, Inc. (Nasdaq:VRTY)
Makes software tools for searching, filtering and retrieving information on the Internet.
Initial offering date: Oct. 6, 1995
Initial offering price: $12
1995 revenue: $21M



Xylan Corp. (Nasdaq:XYLN)
Provider of high-bandwidth switching systems
Initial offering date: March 11, 1996
Initial offering price: $26
1995 revenue: Not yet available*

*Companies that went public in 1996 have yet to disclose their annual revenue

The Week in Stocks

Gainers / Losers

PERCENT

Gainers		Losers	
Cambridge Tech. Partners	42.3	Cyrix(L)	-25.8
Pinnacle Micro Inc.(L)	25.5	VMark Software Inc.	-24.0
Xircom	22.1	Proteon Inc.(L)	-20.0
Peoplesoft	17.5	PSINet	-16.0
Truevision Corp.	17.2	Merisel	-14.3
DSC Communications	15.8	Banyan Systems Inc.	-13.8
Raptor Systems(L)	14.8	Corel Corp.	-13.5
Microcom Inc.(L)	14.6	NetFrame	-12.5

DOLLAR

Gainers		Losers	
Peoplesoft	10.75	Cyrix(L)	-6.00
Cambridge Tech. Partners	8.25	Policy Management Sys.	-4.50
Netscape Comm. Corp.	7.88	Microsoft Corp.	-4.19
Arbor Software	6.00	Autodesk Inc.	-3.94
Cascade Communications	5.13	Systemsoft Corp.	-3.13
Shiva Corp.	4.25	3COM Corp.	-2.88
DSC Communications	4.13	BMC Software Inc.	-2.88
Newbridge Networks Corp.	4.00	VMark Software Inc.	-2.88

Industry Almanac

Satisfied with second billing

As with summer movies, some investors want only the biggest stars and the flashiest, highest-budget blockbusters in their portfolios. They overlook smaller, charming, nimble companies that could add some sparkle to their stock holdings.

In consulting and integration, the big names include **Electronic Data Systems Corp. (NYSE:EDS)**, **Computer Sciences Corp. (NYSE:CSC)** and privately held **Andersen Consulting**. But the Siskels and Eberts of Wall Street also laud a smaller player, **Cambridge Technology Partners (Nasdaq:CATP)**.

The firm specializes in the client/server segment of the integration business. The Cambridge, Mass., company also takes an unusual approach: It structures its contracts so that work is delivered within a specific time for a fixed price.

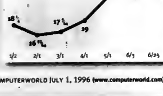
"They are clearly a leader in the integration market," says Bill Loomis, an analyst at Ferris, Baker Watts, Inc. in Baltimore. "The fixed time/fixed price approach is refreshing for customers who are used to projects dragging on and on, with the price tag going up and up." Loomis gives the stock a buy rating and expects it to rise to $27 over the next 12 months.

Other analysts also favor Cambridge Technology Partners. Mark D'Annolfo, managing director at Adams, Harkness & Hill, Inc. in Boston, says he expects the stock to approach $35 in the next 12 months.

D'Annolfo says the company probably will make an acquisition to help it fill out a product line or cover a wider geographical area. "I expect they'll pick up a computer telephony integration company or a product/service expert by the end of this year," he says. *— Stewart Deck*

A rising star

Analysts expect Cambridge Technology Partners' stock to continue rising because the company serves the booming integration market



Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
COMS	53.63	32.63	3COM Corp	45.50	2.88	5.9
AIT	66.88	44.00	Ameritech Corp	59.13	0.25	0.4
AXE	22.13	15.00	Anixter Intl (L)	15.00	0.75	4.8
APTS	12.13	2.75	Apertus Tech	3.44	0.19	5.7
T	68.88	51.38	AT&T	62.13	-0.13	-0.2
ASND	71.25	11.25	Ascend Communications	55.88	0.63	1.1
BNYN	14.13	6.00	Banyan Systems Inc	7.00	1.13	-13.8
BAY	50.00	24.63	Bay Networks Inc	26.00	1.00	3.2
BEL	80.38	43.50	Bell Atlantic Corp	63.00	1.38	2.2
BLS	45.88	31.00	BellSouth Corp	42.13	2.13	5.3
BRKT	32.75	4.63	Brooktrout Technology	27.00	1.56	6.1
CS	87.75	48.65	Cabletron Systems	68.25	2.13	3.2
CSCC	68.00	13.13	Cascade Communications	68.00	5.13	8.2
CGRM	25.13	13.25	Centigram Communications	15.63	0.50	3.3
CSCO	57.88	24.25	Cisco Systems Inc	56.88	3.75	6.1
CLIX	11.38	4.50	Compression Labs Inc	5.75	-0.25	-4.2
CMNT	12.75	4.00	Computer Network Tech	7.13	-0.08	-0.9
KCOM	14.50	8.75	CrossComm	10.25	-0.25	-2.4
DIGI	64.00	21.88	DSC Communications	30.25	4.13	15.8
FORE	44.75	14.88	FORE Systems Inc	38.38	3.75	11.5
GDC	21.88	10.00	General DataComm Inds.	13.63	1.63	-10.7
GSX	42.50	28.00	General Signal Networks	37.63	-0.13	-0.3
GTE	49.25	33.00	GTE Corp	44.88	0.38	1.3
LU	39.25	29.75	Lucent Tech	37.75	0.88	2.4
MCIC	31.13	19.75	MCI Communications Corp	25.63	0.00	0.0
MICM	14.38	6.00	MICOM Communications Corp	12.13	0.38	3.2
MNPI	34.50	10.00	Microcom Inc (L)	12.75	1.63	14.6
NETM	34.00	9.38	NetManage Inc	11.13	0.00	0.0
NTRX	10.88	3.63	Netrix Corp	9.00	0.15	1.4
NCDI	12.00	2.88	Network Computing Devices	5.88	-0.19	-3.6
NWK	42.00	19.38	Network Equipment Tech (L)	21.75	1.63	8.3
NETG	27.63	12.25	Network General	22.00	-2.13	-8.8
NN	74.25	25.00	Newbridge Networks Corp	65.25	4.00	6.3
NT	55.38	31.50	Northern Telecom Ltd	54.38	0.88	1.6
NOVL	21.63	11.38	Novell Inc.	13.75	-0.25	-1.8
NYN	59.25	39.25	Nynex Corp	47.00	1.00	2.2
OCTL	26.25	12.63	Octel Communications Corp	20.50	-2.44	10.8
ODSI	43.25	17.00	Optical Data Systems Inc	25.00	-0.75	-3.3
PAC	35.25	25.63	Pacific Telesis	33.63	-0.75	-0.7
PCTL	44.72	29.75	PictureTel Corp	39.00	1.88	5.1
PTON	10.75	3.63	Proteon Inc. (L)	4.00	1.00	-20.0
RACO	7.88	3.88	Racotek Inc	4.75	-0.38	-9.5
RETX	10.88	1.81	Retix	7.25	-0.38	-4.9
SBC	60.25	45.50	SBC Communications	48.75	-0.75	-1.5
SFA	23.38	11.38	Scientific Atlanta Inc.	15.25	0.00	0.0
SHVA	82.25	19.38	Shiva Corp	80.25	4.25	5.6
FON	45.50	29.25	Sprint Corp	42.00	1.38	3.4
SMSC	23.50	14.18	Standard Microsystems Corp	15.38	0.38	-3.1
STRM	57.50	20.50	Stratacom Inc.	56.38	3.00	5.6
TBIT	13.88	2.38	Telebit Corp	11.81	-0.94	-7.4
USRX	105.50	25.30	US Robotics	85.25	-0.38	-0.4
USW	48.38	28.38	U S West Inc	51.88	-0.17	-0.4
XIRC	17.50	8.88	Xircom	14.50	2.63	22.1
XYLN	76.00	43.63	Xylan Corp (L)	46.50	-1.00	-2.1

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
AALR	10.38	5.75	Advanced Logic Research	8.00	-0.75	-8.6
AAPL	49.88	19.63	Apple Computer Inc (L)	20.88	1.75	-7.7
ASTA	17.88	4.63	AST Research Inc	6.88	-0.56	-7.6
CPQ	56.75	35.88	Compaq Computer Corp	49.13	0.88	1.8
DELL	57.25	23.00	Dell Computer Corp	51.00	-0.75	-1.4
GATE	41.50	18.00	Gateway 2000 Inc	33.50	1.13	3.2
HWP	115.38	70.00	Hewlett Packard Co	98.38	4.00	4.2
MUEI	75.88	9.00	Micron International Inc.	12.19	1.38	-10.3
NIPNY	75.13	52.75	NEC America	54.00	1.00	1.8
SGI	45.63	21.13	Silicon Graphics	24.25	-0.63	-2.3
SUNW	67.13	19.75	Sun Microsystems Inc	59.00	-0.94	-1.8

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
AMH	13.50	6.75	Amdahl Corp	10.25	0.00	0.0
DGN	19.13	8.13	Data General Corp	13.13	0.63	5.0
DEC	76.50	35.13	Digital Equipment Corp	45.88	1.75	4.0
IBM	128.88	83.13	IBM	99.25	-0.75	-0.8
MDCO	20.25	5.13	Meridian Data Inc	9.00	-0.13	5.4
NETF	7.38	3.88	NetFrame	4.38	-0.63	-12.5
SQNT	25.38	10.13	Sequent Computer Sys.	13.38	0.75	-9.9
SEQS	10.00	2.88	Sequoia Systems Inc.	3.00	-0.25	-7.7
SRA	38.13	23.00	Stratus Computer Inc.	30.13	1.50	-4.7
TDM	17.50	8.38	Tandem Computers Inc	11.25	0.88	8.4
TRCO	7.56	2.00	TriCord Systems	4.63	-0.50	-9.8
UIS	11.50	5.50	Unisys Corp	6.88	-0.13	-1.8

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
ADBE	74.25	30.00	Adobe Systems Inc	35.75	-0.13	-0.3
AMSWA	8.75	3.63	American Software Inc.	4.63	0.00	0.0
APLX	42.50	8.25	Applix Inc	28.13	-0.63	-2.2
ARSW	82.75	28.75	Arbor Software	59.25	6.00	55.3
ADSK	53.00	27.75	Autodesk Inc	25.88	-3.94	-13.6
BACH	11.88	4.63	Bachman Info. Systems	6.88	-0.75	-9.8
BGSS	50.00	25.25	BGS Systems Inc	39.00	1.00	2.6
BMCS	67.75	52.50	BMC Software Inc	59.63	-2.88	-4.6
BOOL	26.75	19.25	Boole and Babbage	23.31	1.48	-5.8
BORL	21.25	8.88	Borland Int'l Inc. (L)	9.06	-0.94	-9.4
BOBJY	55.50	15.88	Business Objects	40.25	-0.50	1.2
CYE	27.88	14.13	Cheyenne Software Inc	19.50	0.75	4.0
COGNF	27.38	9.00	Cognos Inc	22.88	2.13	10.2
CA	82.13	37.25	Computer Associates	69.13	-1.25	-1.8
CVN	15.50	5.50	Computervision Corp	10.63	0.00	0.0
CPWR	40.75	15.50	Compuware Corp	39.25	-0.50	-1.3
CSRE	31.50	12.38	Comshare Inc	75.00	1.50	5.5
COSFF	19.50	8.50	Corel Corp	10.50	1.63	-13.5
DWTI	15.75	3.75	Dataware Technologies Inc	6.00	-0.44	-6.8
FILE	67.00	31.50	FileNet Corp (L)	36.25	-2.25	-5.8
DDDDF	8.25	3.50	4th Dimension	6.50	-0.63	-8.8
FTPS	40.63	7.75	FTP Software Inc (L)	8.13	-0.38	-4.4
GSOF	26.00	7.00	Group 1 Software	8.00	-0.50	5.9
GPTAE	10.50	3.75	Gupta	4.75	-0.75	-5.0
HUM	28.88	17.00	Hummingbird Comm Ltd	17.88	-0.50	-2.7
HYSW	28.38	9.75	Hyperion Software Corp	12.25	-0.63	-4.9
IRIC	16.25	10.00	Information Resources	12.13	-0.50	-3.0
IFMX	36.75	16.88	Informix Corp	22.38	0.88	4.1
INGR	20.13	10.88	Intergraph Corp	12.00	-0.25	-2.0
LEAF	12.63	6.13	Interleaf Inc	6.50	-0.63	-8.8
ISLI	26.25	8.75	Intersolv Inc	9.63	-0.25	2.3
INTU	89.25	34.13	Intuit Inc	47.73	1.00	-2.1
LGWX	32.25	10.88	Logic Works	13.25	1.00	8.2
MAPS	37.75	9.00	MapInfo Corp. (L)	10.50	0.50	5.0
MATH	9.25	4.25	MathSoft	5.63	-0.50	-8.2
MCAF	54.00	12.38	McAfee Associates (H)	50.25	0.25	0.5
MENT	22.88	10.88	Mentor Graphics	16.00	-0.50	-3.0
MIFGY	21.25	8.25	Micro Focus	12.50	-1.00	-7.4
MGXI	18.63	7.63	Micrografx Inc	14.75	-0.25	-1.7
MSFT	125.88	79.88	Microsoft Corp	119.38	-4.19	-3.4
ORCL	39.19	23.38	Oracle Corp (H)	50.19	1.69	4.3
PMTC	49.50	23.13	Parametric Technology	43.38	2.63	-5.2
PARQ	14.63	6.63	ParcPlace Systems Inc	9.13	-0.25	-2.7
PSFT	73.00	25.75	PeopleSoft	72.25	10.75	17.5
PTEC	20.38	9.88	Phoenix Technologies	16.50	-0.25	-1.5
PSQL	16.88	3.13	Platinum Software	7.50	-0.50	-6.3
PLAT	26.00	11.25	Platinum Technology	15.00	0.38	2.6
PRGS	38.00	13.88	Progress Software Corp (L)	15.63	-0.75	5.0
RNBO	24.75	16.88	Rainbow Technologies Inc.	19.75	1.25	6.8
REDB	61.00	29.50	Red Brick Systems Inc.	36.75	-2.00	-5.8
ROSS	8.13	2.19	Ross Systems	5.65	0.50	2.1
SCOC	12.13	5.30	SCO Inc.	6.88	-0.13	-1.8
SDTI	109.00	37.63	Security Dynamics Tech	82.50	-2.25	-2.7
SKEY	31.75	13.38	Softkey International Inc.	19.00	-1.63	-7.9
SPCO	5.13	2.29	Software Publishing Corp.	2.88	-0.19	-4.2
SQAX	39.75	16.00	SQA Inc.	28.13	-0.75	-2.6
SOTA	19.75	6.63	State of the Art	17.75	0.38	2.2
SSW	81.38	36.75	Sterling Software Inc	27.38	-0.13	-0.2
SDRC	37.38	10.38	Struct. Dynamics Research	22.13	-2.63	-10.6
SYBS	38.75	20.75	Sybase Inc. (L)	23.25	-0.13	-0.5
SYMC	33.25	9.88	Symantec Corp	12.50	0.50	4.2
SNPS	46.75	23.00	Synopsys	40.00	-0.50	-1.2
SSAX	30.69	12.63	System Software Assoc.	17.00	-0.13	-0.7
SYSF	80.75	8.75	SystemSoft Corp	43.75	-3.13	-6.7
TRUV	10.13	4.63	Truevision Corp	7.23	1.06	17.2
VIEW	17.50	9.63	Viewlogic Systems	14.00	0.13	0.9
VMRK	21.50	5.75	VMark Software Inc.	9.13	-2.88	24.0
WALK	17.75	4.88	Walker Interactive Systems	30.00	0.00	0.0
WALL	23.75	13.00	Wall Data Inc.	21.50	1.00	4.9
WANG	26.13	14.50	Wang Laboratories Inc	19.00	0.38	2.0

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
AMER	71.00	20.00	America On-Line	43.88	3.88	9.7
BBN	48.75	20.25	BBN Corp	21.75	-0.25	-1.1
CSRV	35.30	20.44	CompuServe Corp. (L)	21.38	-1.00	-4.5
LCOS	25.23	8.25	Lycos Inc. (L)	11.13	0.50	4.7
NETC	91.50	19.22	Netcom On-Line	27.00	-2.38	-8.5
NSCP	87.00	22.88	Netscape Comm. Corp	61.88	7.88	14.6
PSIX	29.00	6.75	PSINet	11.13	2.13	16.0
QDEK	39.50	7.88	Quarterdeck Corp. (L)	9.38	0.00	0.0
RAPT	39.25	19.25	Raptor Systems (L)	26.13	3.38	14.8
SCUR	64.50	19.00	Secure Computing Corp	23.00	-1.50	-6.1
SPYG	61.00	13.25	Spyglass Inc.	21.25	1.00	9.7
UUNT	98.75	24.75	UUNET Tech	65.50	-1.00	-1.5
YHOO	43.00	20.25	Yahoo! Inc. (L)	20.23	-2.25	-10.0

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
AMD	38.88	13.00	Advanced Micro Devices (L)	13.63	-0.25	-1.8
ADI	30.13	17.50	Analog Devices Inc	25.61	0.50	2.0
CHPS	15.88	7.88	Chips and Technologies	9.88	-0.63	-6.0
CRUS	61.13	55.88	Cirrus Logic (L)	17.63	-0.06	-0.3
CY	27.75	10.00	Cypress Semiconductor Corp.	11.75	-0.38	-3.1
CYRX	49.75	13.63	Cyrix (L)	17.25	-6.00	-25.8
INTC	78.38	49.81	Intel Corp	73.50	2.63	3.7
LSI	62.30	22.50	LSI Logic Corp	26.13	0.25	1.0
LSCC	63.00	21.61	Lattice Semiconductor (L)	24.00	1.00	4.5
MCRL	32.30	12.25	Micrel Semiconductor Inc	16.00	2.00	14.3
MU	94.75	74.88	Micron Technology (L)	26.65	-2.13	-7.7
MOT	82.50	44.75	Motorola Inc.	62.73	-1.13	-1.8
NSM	33.63	13.50	National Semiconductor	15.38	-0.63	-3.9
TXN	83.73	42.75	Texas Instruments	49.68	-2.00	-3.9
VLSI	39.13	10.75	VLSI Technology	16.00	0.13	0.9
WWTK	6.88	0.75	Weitek	0.81	-0.06	-7.1
WDC	35.00	14.38	Western Digital Corp	25.50	0.88	3.6
XLNX	35.38	23.25	Xilinx	31.50	-0.75	-2.3
ZLG	54.13	24.38	Zilog Inc. (L)	24.38	1.00	3.9

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
APCC	25.25	7.38	American Power Conversion	10.75	-0.25	-2.3
ADPT	81.50	34.88	Adaptec Inc	47.88	-0.75	-1.3
CBEX	13.13	5.00	Cambex Corp	5.69	-0.19	-3.2
CGN	7.25	3.06	Cognitronics Corp	4.88	-0.06	-1.3
CREAF	14.13	5.75	Creative Technologies Inc.	6.15	0.00	0.0
BACE	12.00	3.63	Data Race Inc	6.61	0.75	12.8
DTM	9.38	4.13	Dataram Corp	6.00	-0.38	-5.9
EMC	27.38	13.00	EMC Corp	18.63	-0.13	-0.7
EMLX	28.38	6.38	Emulex Corp	14.63	-0.56	-3.7
ESCC	29.00	14.75	Evans and Sutherland	21.38	1.38	6.0
EXBT	22.75	10.00	Exabyte	13.15	-3.00	-7.1
IISLF	4.13	1.50	Intelligent Info. Systems	2.94	0.19	6.8
IOMG	33.13	7.75	Iomega Corp	29.50	-0.88	-2.9
IPLS	8.25	2.50	IPL Systems Inc.	4.15	-0.13	-2.9
KMAG	37.50	21.38	Komag Inc	26.38	1.13	4.5
MTSI	26.38	11.25	Micro Touch Systems Inc	18.00	0.00	0.0
PEAK	34.75	17.25	Peak Technology Group	23.38	0.38	1.6
PNCL	19.75	6.63	Pinnacle Micro Inc. (L)	8.63	3.75	25.5
PTNX	25.88	9.19	Printronix Inc.	15.63	-0.88	3.3
AQM	8.75	3.25	QMS Inc.	5.63	-0.25	-4.3
QNTM	28.50	13.75	Quantum Corp (L)	14.50	-0.63	-4.1
RDUS	12.75	0.94	Radius Inc.	2.69	-0.31	-10.4
SEG	67.75	36.63	Seagate Technology	45.13	-0.25	-0.6
STK	60.13	21.75	Storage Technology	38.88	0.63	1.6
STLC	8.75	3.25	Streamlogic Corp	3.63	-0.50	-12.1
TEK	61.88	29.75	Tektronix Inc.	48.38	2.88	6.9
XRX	54.75	36.50	Xerox Corp	33.00	1.13	3.3

Exch	52-Week Range			June 28 3 PM	Wk Net Change	Wk Pct Change
AMSY	33.38	15.13	American Mgmt. Systems	29.38	0.38	1.3
ANLY	63.75	25.50	Analysts Int'l	42.00	1.35	3.3
AUD	43.38	30.75	Auto Data Processing	38.38	0.75	2.0
CATP	27.75	10.38	Cambridge Tech. Partners	27.75	8.25	42.3
CEN	54.88	35.88	Ceridian Corp.	50.50	-1.25	-2.4
CDO	28.43	18.88	Comdisco Inc	27.00	0.63	2.4
CHRZ	54.00	10.13	Computer Horizons	46.38	3.88	10.6
CSC	80.75	51.75	Computer Sciences	75.50	1.61	2.2
TSK	31.88	12.00	Computer Task Group	27.63	-1.63	-5.6
CPU	48.75	12.88	CompUSA Inc.	35.50	-3.50	-4.1
CDAT	27.50	8.63	Control Data Systems Inc.	20.88	1.88	9.0
EGGS	14.75	5.00	Egghead Discount Software	10.88	-0.88	-7.4
EDS	58.63	41.50	Electronic Data Systems Corp	54.75	0.63	1.2
INAC	24.75	9.13	Inacom Corp	18.75	0.50	2.7
INEL	14.63	3.50	Intelligent Electronics	8.75	1.13	17.6
KEA	41.25	18.75	Keane Inc	37.25	0.88	2.4
MSEL	8.38	2.25	Merisel	3.75	-0.63	-14.3
MICA	16.75	7.25	MicroAge Inc	13.38	0.00	0.0
PAYX	50.63	23.25	Paychex	48.25	1.50	2.9
PMS	55.50	42.63	Policy Management Sys.	49.38	-4.50	-8.4
REY	55.63	28.13	Reynolds and Reynolds	53.13	2.25	4.4
SCBI	30.50	13.00	SCB Computer Tech. Inc.	13.75	-0.50	-3.1
SEIC	26.38	19.75	SEI Corp	21.38	-0.38	-3.2
SMED	72.13	35.63	Shared Medical Systems	64.25	2.00	3.21
SSPE	24.50	17.00	Software Spectrum Inc.	22.50	0.50	2.27

KEY (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International Inc., Boulder, Colorado
This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and Computerworld assume no liability for any inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

How to contact CW editors

CONTACTING US BY PHONE
All editors can be contacted at our main phone number, (508) 879-0700, unless otherwise noted below. Our **24-hour news tip line** is (508) 820-8555. For **subscriptions**, call (800) 669-1002, **back issues**, call (508) 820-8129, **reprints**, call (508) 820-8125. Our **main fax number** is (508) 875-8931.

CONTACTING US BY E-MAIL
Our Web address is www.computerworld.com. All of our staff members can be reached via E-mail on the **Internet** using the form firstname_lastname@cw.com. For example, News editor Patricia Keefe is at patricia_keefe@cw.com. IDG News Service correspondents can be reached using the form firstname_lastname@idg.com. **Subscription** inquiries go to circulation@cw.com. **Letters to the editor** are welcome and should be sent to letters@cw.com. Please include your address and telephone number.

CONTACTING US BY MAIL
Our postal address is PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701

Respond to our **Talkback** inquiries at talkback@cw.com.

CONTACTING CW EDITORS
We invite our readers to call or write with comments and ideas. It is best to submit ideas to one of the department editors as well as to the appropriate beat reporter.

Editor	Paul Gillin (508) 820-7724
Executive Editor	Maryfran Johnson (508) 820-8179

DEPARTMENT EDITORS/NEWS

News Editor	Patricia Keefe (508) 820-8183
Sections Editor	Johanna Ambrosio (508) 820-8553
Assistant News Editor	Neal Weinberg (508) 820-8177
Assistant Sections Editor	Kevin Fogarty (508) 820-8246
Online Editor	Michael Fitzgerald (508) 820-8206
Associate Editor, News	Mitch Betts (202) 347-4718

SENIOR EDITORS/NEWS

Government and security	Gary H. Anthes (202) 347-0134
Local-area networks	Laura DiDio (508) 820-8182
Network management	Patrick Dryden (817) 924-3485

PC hardware, systems management	Bob Francis (214) 387-1188
Application development	Frank Hayes (503) 252-0100
IS management	Thomas Hoffman (201) 587-0090
Client/server applications	Julia King (610) 532-7599
Internet	Kim S. Nash (214) 716 9822
Apple and PC software	Lisa Picarille (415) 548-5571
Databases	Dan Richman (360) 579-2065
Unix, Sun, open systems	Craig Stedman (508) 820-8120
Internet	Mitch Wagner (415) 548-5513
Internetworking	Bob Wallace (508) 820-8214

SENIOR WRITERS/NEWS

Mobile computing, social issues	Mindy Blodgett (508) 820-8108
Mainframes, high-end storage	Michael Goldberg (508) 620-7789
Groupware, E-mail	Tim Ouellette (508) 820-8215
Midrange hardware, low-end storage	Jaikumar Vijayan (508) 820-8220
PC software, multimedia, imaging	April Jacobs (508) 820-8121
App development components	Sharon Gaudin (508) 820-8122

STAFF WRITERS/NEWS

New products, imaging, multimedia	Stewart Deck (508) 820-8155
Telecommunications	Kim Girard (508) 820-8213
@Computerworld	Justin Hibbard (415) 548-5515
@Computerworld	Juan Carlos Perez (508) 820-8567
@Computerworld	Randy Weston (508) 628-4869

OPINIONS/VIEWPOINT

Technical Editor	Charles Babcock (415) 548-5512
Viewpoint Editor	Mitch Betts (202) 347-4718

DEPARTMENT EDITORS/FEATURES

Technology Evaluation/CW Guide	James Connolly (508) 820-8164

SENIOR EDITORS/FEATURES

Managing	Allan E. Alter (508) 620-7714
In Depth	Steve Ulfelder (508) 620-7745
Finance & Investing	Tom Hoffman (508) 820-8147
Corporate strategies	Joseph Maglitta (508) 820-8192
Management	Robert L. Scheier (508) 628-4931
Careers	David B. Weldon (508) 820-8166
Guide	Cathleen Gagne (508) 620-7729

ASSOCIATE EDITORS/FEATURES

Managing	Rick Saia (508) 820-8118

RESEARCH

Bob Fink, senior research manager (508) 820-8126; Kevin Burden, senior researcher; Laura Hunt, research analyst, Amy Malloy, assistant researcher; Stefanie McCann, senior graphics coordinator; Mari Keefe, Fungelman intern.

SPECIAL PROJECTS, SUPPLEMENTAL PUBLICATIONS

(Including Premier 100, Best Places to Work, Campus edition, Leadership Series and Salary Survey)
Bruce Rayner, special projects editor (508) 820-8195; Joyce Chutchian-Ferranti, Pat Erickson, Anne McCrory, managing editors.

COPY DESK

Ellen Fanning, managing editor (508) 820-8174; Gilberto Pavoni, assistant managing editor; Christine Alcardi Maguire, senior copy editor; Kimberly Gillard, Michelle Graham, senior production copy editors; Jamie Eckle, Pat Hyde, David Ramel, Jeremy Selwyn, copy editors, Monica Sambataro, online copy editor.

GRAPHIC DESIGN

Tom Monahan, design director (508) 820-8218; Janell Genovese, Mitchell J. Hayes, Nancy Kowal, senior graphic designers, David Waugh, Mary Beth Welch, Stephanie Wershey, graphic designers; Rich Tennant, John Klossner, cartoonists.

ADMINISTRATIVE SUPPORT

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Rita Jones (ext. 8172), editorial assistants; Chris Flanagan, West Coast editorial assistant, (415) 548-5563.

COMPUTERWORLD CLIENT/SERVER JOURNAL

Alan Alper, editor (508) 820-8115, Mary Brandel, executive editor; Catherine McCrorey, managing editor; Stephanie Faucher, art director; Kimberlee A. Smith, assistant managing editor.

IDG NEWS SERVICE CORRESPONDENTS

Paris bureau chief	Marc Ferranti (33) 1 4904-8001
Paris correspondent	Jeanette Borzo (33) 1 4904 7917
Munich correspondent	Torsten Busse (49) 89-611-6057
UK correspondent	Ron Condon (44) 181-480-0944
Tokyo correspondent	Rob Guth (81) 33 358-6122
Taipei correspondent	Terho Uimonen (88) 62-300-6523

Companies in this issue

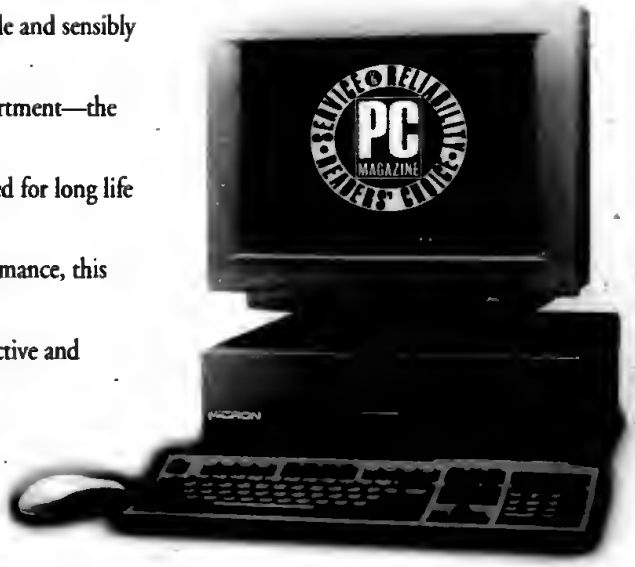
Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

3Com Corp 14,45
@Café 53
A. W. Chesterton 14
Acer America Corp. 39
Advanced Micro Devices, Inc. 30
Aetna Health Plans 1
Affiliated Computer Services, Inc. 39,61
Airbus Service Co. 61
AirSoft, Inc. 30
Amdahl Corp. 39
America Online, Inc. 14
American Airlines 8
Americast 66
Ameritech Corp. 28,66
Apple Computer, Inc. 1,39,41 53,61,63
Applix, Inc. 54
Artisoft, Inc. 48
AST Research, Inc. 8,30
AT&T Corp 6,30,61
AT&T Paradyne 8
AT&T Wireless Services, Inc. 14
Attachmate Corp 14
Aurum Software, Inc. 16
Bain Capital, Inc. 10
Banyan Systems, Inc. 12,54
Bay Networks, Inc. 45,54
BEA Systems, Inc. 43
BellSouth Corp. 66
Bemis Corp. 10
Blue Cross/Blue Shield of Massachusetts 14
Blue Cross/Blue Shield of Rhode Island 57
BMC Software, Inc. 44
BMW of North America, Inc. 61
Boole & Babbage, Inc. 28
Booz-Allen & Hamilton, Inc. 1
Borland International, Inc. 44
C-T Link 12
Cabletron Systems, Inc. 45
Cadboro Bay Pharmacy 57
CallWare Technology, Inc. 48
Canadian Imperial Bank of Commerce 68
Candle Corp 28
Caterpillar, Inc. 89
CellNet Data Systems 61
Chevron Corp. 66
Cheyenne Software, Inc. 28,48,61
Chrysler Corp. 1,28
Chubb & Son Insurance Co. 28
Cigna Corp 44
Cincinnati Bell 16
Cisco Systems, Inc. 1,45
Citicorp 8
Cognos Corp. 57
Coldwell Banker 66
Communication Network Architects, Inc. 12,16
Compaq Computer Corp. 8,30,39,41,53
CompuServe, Inc. 8,48
Computer Associates International, Inc. 28,48
Computer Sciences Corp. 8
Corestates Bank 39
Cray Communications Corp. 20
CRSS Constructors, Inc. 39
CSS Laboratories, Inc. 41
Cumd & Co. 30
Cyrix Corp 30
Dataprobe, Inc. 41
Dataquest 12,48
Del Webb Corp. 1
Dell Computer Corp. 61
DigiKey, Inc. 16
Digital Equipment Corp. 4,8 16,45
Digital Ocean, Inc. 41
Dow Jones & Co. 54
DSP Development Corp. 44
Du Charme, McMillen & Associates, Inc. 1
Du Pont Co. 8
Dun & Bradstreet Corp 10
Dun & Bradstreet Software 10
Electronic Data Systems Corp. 1,8
Encore Computer Corp. 61
Enterprise Technology Corp. 66
Entex Information Services 8
Environment Canada 1
Environmental Systems Research Institute, Inc. 44
Expersoft 68
Federal Data Corp. 43
First Albany Corp. 10
First Data Resources, Inc. 28
Five Paces, Inc. 61
Ford Motor Co. 1
FTP Software, Inc. 14
Fuji Capital Markets Corp. 25
Fulcrum Technologies, Inc. 43
Gateway 2000, Inc. 41
General Electric Co. 61
General Mills, Inc. 6
Global Marine, Inc. 10
Goldman, Sachs & Co. 68
Graphic Controls Corp. 66
GTE Corp. 66
Healtheon Corp. 14
Hewlett-Packard Co. 4,6,12 28,53,54,61
Hitachi Data Systems Corp. 39
Holistic Systems Ltd. 30
Hughes Electronics Corp. 1
IBM 8,39,41,43,48 53,57,61,89
Individual, Inc. 54
Informix Software, Inc. 6
Intel Corp. 8,12,30,39,41
Interlink Computer Sciences, Inc. 61
International Data Corp. 12,30 39,44,53
International Data Group 14
Iomega Corp 6
Iona Technologies Ltd. 43
IPO Value Monitor 85
JCC USA 53
JetForm Corp. 44
JTS Corp. 6
Just in Time Solutions, Inc. 1
Karten Associates 63
Kruse, Inc. 44
LanPro Business Solutions, Inc. 48
Legato Systems, Inc. 61
Lockheed Martin Astronautics 1
Lockheed Martin Corp. 1
Lockheed Martin Missile and Space 61
Lotus Development Corp. 14,41 48,49
LSI Logic Corp. 1
Lucent Technologies, Inc. 8
Madge Networks, Inc. 25
McAfee Associates, Inc. 8
MCI Communications Corp. 14,28
McSorley's 53
MEMC Electronic Materials, Inc. 43
Metropolitan Mortgage & Securities Co. 1
Micro Focus, Inc. 44
Microsoft Corp. 6,8,12,14 16,28,41,43,44,45,48,68
Mitel Corp. 48
MKE Ltd. 6
Mobile Insights, Inc. 39
National Computer Security Association 54
NCR Corp. 43
Netcom On-Line Communication Services, Inc. 14
Netscape Communications Corp. 8,14,41,48,54,68
New York Life Insurance Co. 1
Nike, Inc. 30
Northwestern Mutual Life Insurance Co. 28
Novell, Inc. 12,14,45,48
NStore Corp. 30
NYLcare Healthplans 1
Object International, Inc. 44
Occidental Chemical Corp. 8
Occidental Petroleum Corp. 8
Ontrack Data Recovery 4
Oppenheimer & Co. 30
Oracle Corp. 6,53
Panasonic Computer Peripheral Co. 41
Parallel Storage Solutions, Inc. 48
Parman, Tanner, Soule & Jackson 44
Parsons Brinckerhoff 43
Performance Technology, Inc. 54
Perot Systems Corp. 8
Pioneer Hi-Bred International, Inc. 63
Platinum Technology, Inc. 28
PointCast, Inc. 1,54
Power Computing Corp. 1
Princeton Financial Systems 14
PrivNet 4
Public Health Trust 8
Quality Education Data 39
Raptor Systems, Inc. 53
RCI Management, Inc. 63
Red Brick Systems, Inc. 44
Rich Products Corp. 66
Rocker Partners 6
Rockport Co. 66
Rogers, Casey and Associates 66
Royal Insurance Life and Pensions 61
Sabre Computer Services 8
Sales Vision, Inc 1
Sam Albert Associates 89
Samsung Electronics Corp. 8
SanDisk Corp. 41
Sanford C. Bernstein and Co. 44
SBC Communications, Inc. 66
SCO, Inc. 12
Seagate Technology, Inc. 30
Securities Data Co. 85
Security First Network Bank 8
Sheldon I. Dorenfest & Associates Ltd. 14
Shiva Corp. 30
SHL, Inc. 1
Showtime Networks, Inc. 25
Siebel Systems, Inc. 1
Siemens Rolm Communications 1
Simba Technologies, Inc. 44
SITA Telecommunications Holdings 8
Software AG 44
Southwestern Bell Technology Resources 66
Sprint Corp. 68
Stream International, Inc. 81
Summit Strategies, Inc. 28
Sun Microsystems, Inc. 6,39,41
SunSoft, Inc. 6
Swire Properties 48
Sybase, Inc. 10
Symantec Corp. 12
TeleChoice, Inc. 25
Texas Commerce Bank 1
The Charles Schwab Corp. 1
The Huntington National Bank 61
The Mutual Life Insurance Company of New York 8
The Palace 8
The Walt Disney Co. 66
Timberland Co. 66
Time Warner Corp. 8
Tivoli Systems, Inc. 28
Transarc Corp. 43
Transportation Technology, Inc. 28
Trecom Business Systems, Inc. 39
Two Crows Corp. 57
UniHealth America, Inc. 30
UniKix Technologies, Inc. 43
Unisys Corp. 39,61
Unum Corp. 63
Vantive Corp. 1,26
Verity, Inc. 43
Warner Music Group 8
WavePhore, Inc. 54
Western Digital Corp. 6
Wyse Technology, Inc. 53
Xerox Corp. 8
Zenith Data Systems 39
Zona Research, Inc. 53

Periodical postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #0384607. Computerworld (ISSN 0010-4841) is published weekly except a single combined issue for the last week in December and the first week in January by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1996 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased through the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page, is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $6.00 a copy; U.S. – $48 a year; Canada – [illegible] a year; Central & So. America – $150 (surface) a year; Europe – $295 a year; all other countries – $295 a year. Subscriptions call toll free (800) 669-1002. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, P.O. Box 2044, Marion, OH 43305.

LIFE IS A SERIES OF CHOICES.

Now there's a PC that's flexible and sensibly priced for your office or department—the Micron™ ClientPro™. Designed for long life and reliable, affordable performance, this new PC offers years of productive and adaptable computing without costly system upgrades. With Micron, you get a system custom configured to fit your office needs and backed by our industry-leading Micron Power℠ warranty*.



SOME ARE JUST EASIER THAN OTHERS.

ClientPro P100

- Intel 100MHz Pentium® processor
- 256KB pipeline burst cache, flash BIOS
- 3Com 3C509 Combo network adapter
- 3.5" floppy drive
- *Tool-free* minitower or desktop
- Microsoft® Mouse, 104-key keyboard
- Microsoft DOS 6.22/Windows® for Workgroups 3.11
- 5-year/3-year Micron Power℠ warranty*

- PCI 64-bit graphics accelerator (1MB EDO)
- 8MB EDO RAM
- 1.0GB EIDE hard drive
- 14" Micron 14FGx, .28dp (12.9" display)
- Microsoft Works preinstalled

$1,499
Bus. lease $51/mo.

- PCI 64-bit graphics accelerator (2MB EDO)
- 16MB EDO RAM
- 1.0GB EIDE hard drive
- 15" Micron 15FGx, .28dp (13.7" display)
- Microsoft Office Pro 4.3 preinstalled

$1,943
Bus. lease $66/mo

ClientPro P166

- Intel 166MHz Pentium processor
- 256KB pipeline burst cache, flash BIOS
- 3Com 3C509 Combo network adapter
- 32MB EDO RAM
- 2.1GB EIDE hard drive
- 3.5" floppy drive
- 8X EIDE CD-ROM drive
- PCI 64-bit graphics accelerator (2MB EDO)
- 17" Micron 17FGx, .26dp (15.8" display)
- *Tool-free* minitower or desktop
- Microsoft Mouse, 104-key keyboard
- Microsoft Windows NT™ Workstation 3.51 CD
- Microsoft Office Pro 95 & Bookshelf® 95 CDs
- 5-year/3-year Micron Power warranty*

$3,282
Bus. lease $112/mo.

MICRON™ ELECTRONICS, INC.

800-362-1204

http://www.mei.micron.com

International Sales 208-893-8970 · International Fax 208-893-7393 · Toll-free from Micron 95-800-708-1755 · Toll-free from Puerto Rico 800-708-1756 · Toll-free from Canada 800-708-1758

©1996 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions and/or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice. prices do not include shipping and handling. 30-day money-back policy does not include return freight and original shipping/handling charges. applies only to Micron brand products and begins from date of shipment. All sales are subject to Micron Electronics' current terms and conditions of sale. Lease prices based on 36-month lease. Intel, Intel Inside and Pentium are registered trademarks of the Intel Corporation. Microsoft, Windows and the Windows logo are registered trademarks and Windows NT is a trademark of Microsoft Corporation. All other service marks, trademarks and registered trademarks are the property of their respective companies. CMWD-960701-CP

Policing the 'net

CONTINUED FROM PAGE 1

internal network to a halt recently as hundreds of users kept up on current events.

The Milpitas, Calif., chip maker didn't want to quash its intranet by scaring users away with harsh rules. But it didn't foresee the technical implications of letting users download Web software at will, said Kevin Han, a consultant at Just in Time Solutions, Inc., a San Francisco-based Web service firm working with LSI.

A new LSI policy says no network applications can be added to a system without approval from IS.

Comprehensive policies address three broad areas: user conduct; standards for hardware, software and security; and content responsibilities (see chart below), according to Hope Youngs-Vimeux, a webmaster at Metropolitan Mortgage & Securities Co. in Spokane, Wash.

Metropolitan hasn't finished its policy yet, but the firm is likely to prohibit end users from updating intranet information directly, Youngs-Vimeux said. Instead, only department heads or network administrators will be able to change pages, she said, to make for clear lines of accountability.

On the other hand, almost all users are allowed to post to an intranet at Environment Canada, the Canadian government's environmental agency. But each major chunk of data or page must be tagged with the author's name, said Mike Reichling, a systems analyst at the agency in Ottawa.

That way, users know where data came from and can judge whether to trust it.

Policies to regulate user behavior on an intranet, meanwhile, shouldn't be much different from existing corporate conduct rules, said Gary E. Fendler, assistant vice president of strategic communications at Aetna Health Plans in Middletown, Conn.

"If someone's doing something they wouldn't normally do in print or on the phone, then [managers] should handle discipline the same way," Fendler said.

Other IS folks advocate laying down some laws but leaving room for amendments as the intranet matures.

For example, NYLcare Healthplans, a managed health care firm in New York, has piloted a handful of intranet applications for several months with a loose policy that, for now, calls for IS to do most of the technical work.

But jobs such as translating data to Web-readable Hypertext Markup Language will likely shift from IS to users and managers, said Susan Farkas, assistant vice president of IS at NYLcare, a subsidiary of New York Life Insurance Co.

"We know that we will face changes," she said. "Preparing for change is the most important policy you can have."

Rules and regulations prototype

Intranet policies split into sections can be more clear and more manageable than ponderous documents that try to cover every contingency

Policy	Items to include	Items to avoid
Usage	Prohibition on offensive communication, using recognized corporate values as a guide	Blanket prohibition of personal use of the Internet
	Reminder that the network and access to the outside Internet are the company's property	
	Statement that the intranet shouldn't be used for personal reasons except in recognized group areas	
	Reminder that the network logs may be used to identify violators of the usage policy	
Technical	Standard set of Web browsers, servers and other gear that will be supported	Prohibition of the trials of "nonstandard" technologies
	Requirement that IS test network-based software	
Style	Guidelines for page layout, graphic size and placement; navigation buttons, links, author, last update and copyright information	Particular guidelines that amount to more than two pages of text (too long to read and remember)

Source: Just in Time Solutions, Inc., San Francisco

Get real-time 'net news feeds. See page 54.

IBM beefs up network controllers

By Bob Wallace

IBM last week detailed plans to add routing capabilities to its enterprise network controllers.

The bulk of the enhancements are for its widely used 3746 Nways Controller Models 900 and 950, which let users save money by replacing or consolidating multiple IBM 3720, 3725 or 3745 front-end processors.

The 3746 is akin to the front-end processors but goes far beyond them by offering robust switching capabilities and support for data transmission over a variety of wide-area network links.

"What IBM has done is build the routing functionality typically found in $50,000 stand-alone routers in to existing 3746 controllers for about $5,000," said Sam Albert, president of Sam Albert Associates in Scarsdale, N.Y. "This is important because it preserves users' heavy investment in the controllers and means the many who haven't yet bought routers may be able to do without them."

Users expressed interest in what will likely become a practice of building routing and other functionality in to enterprise controllers.

"It's an advantage to have more and more capabilities built in to a single product like the 3746 from a management and support standpoint," said Jerry Hosler, supervisor of the telecommunications group of the service and support business unit at Caterpillar, Inc. in East Peoria, Ill.

Albert said the 3746 enhancements put IBM ahead of other enterprise controller vendors.

List of features

Other IBM enhancements include the following:

- High-performance routing support for the mainframe-access boxes, which means users can save money by consolidating IBM SNA and TCP/IP networks over a single frame-relay network.
- Support for Advanced Peer-to-Peer Networking, which provides direct communications between users anywhere in a network — a key requirement for client/server applications.
- A direct link between Ethernet LANs and the 3746s.
- An adapter that will let the boxes support Europe's version of Integrated Services Digital Network Primary Rate Interface service.

Macintosh clones

CONTINUED FROM PAGE 1

gle order for Macintoshes that aren't Apple-branded, weren't disclosed. But observers value the deal at $6 million.

The Astronautics division's purchase consisted of a mix of Power Computing's midrange and high-end systems, including the 120-MHz Power Center 601 and the 150-MHz PowerWave 604, according to Steve Kahng, Power Computing's president and CEO.

A spokesman for the Astronautics division said the company decided to replace older Macintosh models and evaluated bids from both Apple and Power Computing.

"We felt that the proposal from Power Computing provided more service and hardware for the same cost [as Apple]," spokesman Evan McCollum said.

This may be good news for other Lockheed divisions that have Macintoshes. Although Lockheed has a huge number of Macintoshes, it also has 50,000 PCs. And as recently as last year, the company's Missile and Space division in Sunnyvale, Calif., was considering a proposal to throw out its 10,000 Macintoshes in favor of standardizing on Windows 95 machines.

"It's unclear what effect, if any, this will have on us," said a systems analyst at Lockheed Martin Missile and Space. "But it does mean that Lockheed is somewhat committed to the Mac, and that could be good for us in the long run."

Kahng said the Astronautics division also considered moving to the PC platform prior to finally deciding on Power Computing. "They were looking at Windows, and if we didn't get the deal, it would have gone to the Windows side; that's my understanding," Kahng said.

How low can it go?

Apple's stock slipped ¾ of a point last Wednesday to close at a 52-year low of 19 ¼. The tumble came on the heels of news that two key Apple software developers were defecting to work on Internet-related projects at rival Microsoft. Apple's stock was at $50 per share last July before the slide began.

Made the difference

Sources close to the deal said Power Computing's support and its ability to custom-configure the hardware and install the company's custom applications were the deal clinchers.

Ironically, the deal comes just five months after Power Computing faced user complaints regarding its outsourced service and support. But Power Computing has brought its support in-house, increasing its staff from 15 to 200 in the past six months.

In addition, this first big sale for Power Computing comes just two months after the Round Rock, Texas, company started its corporate sales program.

"This proves that Power's machines are not just for some nerdy user-group enthusiast who wants the fastest Mac they can get for the cheapest price. This is a serious business machine," said Pieter Hartsook, editor of "The Hartsook Letter," an industry newsletter in Alameda, Calif.

Hartsook added that Lockheed's decision won't go unnoticed by other corporations that are thinking about purchasing Macintosh clones.

"If clones are good enough for Lockheed, then it's likely that we will start looking at them much more seriously," said one IS manager at a large East Coast investment banking firm.

Apple may have lost this particular Lockheed sale, but observers said what is good for the growth of the overall Macintosh platform is ultimately good for Apple, which receives a royalty on each Macintosh compatible.

Watch for the Pentium PC sweet spot

Charles Babcock

Last Christmas, a 133-MHz Pentium was a top-of-the-line PC for home or office.

"By next Christmas, 133-MHz will represent the bottom of the line," says Nathan Brookwood, principal analyst for microprocessors at Dataquest.

Although we are used to rapid change, this 12-month slide from the top to bottom of the CPU heap is a new phenomenon. Intel, for a variety of reasons, is obsoleting its own products at a faster and faster pace. If the 133-MHz Pentium was king at Christmas, Intel gave up some 133-MHz sales at peak prices when it introduced the 150- and 166-MHz Pentiums at the start of this year. It has also forgone some sales on those top-of-the-line processors by introducing the 200-MHz Pentium in mid-June.

In some cases, information systems managers are selling top management on volume purchases of a PC model, and the model is outdated before the purchase orders can be cleared. What is Intel up to, anyway?

"The thinking at Intel has changed," Brookwood says. "They want to keep all their plants busy. Intel has been pricing its chips over the past year to increase the unit volume of shipments.

"And prices have been coming down at an astounding rate," he adds.

The Meta View

Intel will continue to push performance higher and prices lower for reasons beyond mere competition.

PC buying decisions are going to have to include a calculation of when Intel will up the ante again. "The Pentium Pro is going to come in to the marketplace much faster than the Pentium did," predicts Michael Ross, senior vice president of the Distributed Systems Division at Comdisco in Rosemont, Ill.

The rapid chip upgrades have caused the 120- and 133-MHz Pentium systems to become a sweet spot in the market, often priced less than 100-MHz Pentiums, Ross says. In cases such as this, pricing schemes defy logic. Buyers looking for straight price/performance will have to watch for the models that may be overproduced and overstocked as a new chip emerges.

For example, Packard Bell was selling 100-MHz Pentiums with CD-ROM players in the San Francisco area for $2,000 in May. By mid-June, its $2,000 machine was a 166-MHz Pentium of similar configuration. Anyone thinking a 100-MHz Packard Bell machine was a bargain would have been caught unawares by the 166-MHz model becoming priced similar to it.

It appears to me that Packard Bell was moving a large stock of 100-MHz machines at the $2,000 markup until Intel announced that it was shipping its 200-MHz chips.

Prices for the low end of the Pentium line will be further destabilized by an old Intel competitor, Advanced Micro Devices, which is reasserting its bid for the low end of the Pentium market. A $1.5 billion AMD in Austin, Texas, is churning out Pentium-equivalent chips called K5s. Intel is selling a 200-MHz Pentium for $599 in lots of 1,000. AMD is selling 100-MHz K5s for $84. Which is the better buy for you?

In many cases, finding a low-end Pentium — when 100 MHz is defined as the low end — could be a sweet spot for corporate buyers over the next few months. The supply of chips from AMD will force prices downward, and many rank-and-file PC users would be happy to be upgraded to that level from a 386 or 486 machine.

Intel will continue to push performance higher and prices lower for reasons beyond mere competition. Merely besting AMD and Cyrix would not ensure Intel a rosy future. It outproduces them on a mammoth scale.

At the upper reaches of the Pentium line, Intel has no competition — at least not yet. A bigger factor is the company's need to sustain an expanding market, having invested heavily in production, according to Brookwood. Intel's best guarantee of profit is not beating competitors but stimulating the worldwide Pentium market.

The alert PC buyer will benefit from this aggressiveness if he or she can calculate how today's top chip will drop into the midrange in performance and price and then become the "low-end" chip in a 12-month cycle, as things stand according to the 1995-96 pattern.

Under such tight time frames, 120- or 133-MHz desktops would be a bargain if they were purchased over the next few months rather than at the end of last year. And 100-MHz Pentiums could be a highly suitable alternative for laptops and workers who don't need intense multitasking performance.

Babcock is *Computerworld*'s technical editor. His Internet address is charles_babcock@cw.com.

Inside Lines

Trashing the competition

Trade show rivalries can get pretty heated, but to the point of violence? It happened recently at the Securities Industry Association Information Management show in New York. It seems that someone took exception to BT's new advertising campaign, which features competitors' products in a trash can. The campaign was offensive enough to provoke someone to try and destroy BT's booth at the show. No damage was done, but BT was forced to hire extra security.

Now that our priorities are straight...

At last week's Sun User Group conference in Boston, a session on a Solaris add-on product that manages user access to floppy and CD-ROM drives slogged through a myriad of technical details. Then the speaker turned to the topic that was foremost on everyone's minds: how to get the software to control music CDs. "It's sad but true," he said. "You say you have to have a CD-ROM drive on your workstation to do development, and then you play music."

FanMail from some flounder?

Are you dying to send an admiring missive to Carl Lewis? Then IBM has just the thing for you. IBM will offer FanMail, an Internet program that will let sports fans send electronic postcards to Olympic athletes or teams. FanMail can be accessed at www.fanmail.olympics.ibm.com or through IBM's Games home page at www.olympic.ibm.com. Athletes can receive their mail after July 6.

Intel gets out the scissors

As a way of combating low-cost network computing terminals, Intel in Santa Clara, Calif., this month will unveil a program to lower the lifetime costs of a PC, currently estimated at about $6,410 per year for a high-end model. Sources say Intel's cost-reduction plans include working with PC system vendors and software companies such as Microsoft.

The 5th Wave by Rich Tennant

"THIS WAS WORSE THAN WOODSTOCK—PEOPLE PASSED OUT ON BAD APPS, AND A BUNCH OF ANALYSTS PUSHED OVER AN ESPRESSO MACHINE SCREAMING, 'LATTE TO THE PEOPLE!'"

Java-fueled hub perks up managers

Network managers next month will be able to run Java applets on hubs from UB Networks in Santa Clara, Calif. Then they can interactively monitor and control an EM-Power management module from a Web browser instead of a UB console. UB officials previewed such Web access and an applet that detects which node causes a broadcast storm, disables that port and notifies an administrator.

New spam for old

Years ago, Monty Python brought us the Spam Song; today, the Internet routinely delivers spam, i.e., highly propagated drivel. The two will meet July 6 when 7th Level in Dallas unleashes PythOnline (www.pythonline.com), touted as "a veritable brain enema." It promises new art and commentary from the remaining members of the British comedy troupe but really serves to sell the Python past — pricey memorabilia and (surprise!) the "Monty Python and the Quest for the Holy Grail" CD-ROM game.

Internet users of the Portal Information Network recently found themselves living a good news/bad news joke. The good news, according to one piece of E-mail signed by Portal management, was that they would get three months of free Internet usage. The bad news was a follow-up E-mail: It was all a mistake. Marketers at Portal had been drawing up proposals for promotional pricing, and these came complete with sample promotional announcements. But someone goofed and thought one of the letters was for real and sent it out to users. "He was really embarrassed," said Cindy Larson, vice president of marketing. The users, we assume, were just bummed. If you have news tips for real, please send them to news editor Patricia Keefe at (508) 820-8183 or via E-mail at patricia_keefe@cw.com.

The RS/6000 Web Server In business today, you can't always predict how unexpected events will impact your Web site. But with the RS/6000™ Web server, you can be prepared for whatever comes your way.

For example, RS/6000 UNIX® servers can outscale anything out there, giving you the flexibility to respond to any business opportunity – whether it's around the bend or down the road.

Just as important, you won't find a more security-minded server. From authentication to access control, the RS/6000 provides a wide range of security features, each designed to prevent your data from falling into the wrong hands. And we offer RS/6000 Web servers with everything you'll need to get your Web site up and running fast, including IBM and Netscape® software.

If you're serious about doing business on the Web, start with a serious server: the RS/6000 Web server. For our free guide, "Building Your Web Site," call 1 800 IBM-3333, ext. FE100. Better yet, contact our RS/6000 Web server at www.rs6000.ibm.com

Solutions for a small planet®

IBM

IBM is a registered trademark and RS/6000 and Solutions for a small planet are trademarks of IBM Corp. UNIX is a registered trademark in the U.S. and other countries, licensed exclusively through X/Open Company Limited. All other company and/or product names are trademarks or registered trademarks of their respective companies. The IBM home page can be found at www.ibm.com © 1996 IBM Corp.

Analyze data from any database?

End u

On their own? A

to go to lunch,

Time. To do your job. To think. To actually take lunch. With Lotus Approach,® time is what you'll be giving the entire MIS department. Because Lotus Approach is a powerful, easy-to-learn database that enables end users to manage and analyze corporate information on their own.

In fact, Lotus Approach is so easy to learn, your users can actually be productive within a few hours of opening the box. Which means rather than tapping you on the shoulder every five minutes, they can tap directly into your corporate data themselves. That's the beauty of Lotus Approach.

Just imagine: eod users creating professional reports without you having to hold their hands. Business analysts building their own charts and crosstabs. Users with no programming experience at all generating completed business solutions in seconds using Approach's new SmartMaster™ applications. And you actually having the time to ponder the dessert menu.

With Approach, it doesn't matter where your data is stored. In DB2,® Oracle,® Sybase,® dBASE,® or almost anywhere else. Approach works with your data as it is, and where it is. Users can even join related data from different database systems. Which means that users never need to copy or convert data into yet another database format just to build reports and analyses.

Further proof that Lotus Approach is the right choice for your users: Lotus Approach 96 just won PC Magazine's "Editor's Choice" award, prompting one reviewer to say, "If there's an effective database product that surpasses all others in ease of use, it's Lotus Approach." We couldn't have said it better ourselves.

There's a lot more Lotus Approach can-do, which means there's a lot more time for you to do what you'd rather do. To find out more about Lotus Approach 96, or if you're a DB2 user looking to "Extend the Power of DB2," call **1-800-TRADE-UP, ext. B993.** Or visit us on the World Wide Web at **www.lotus.com.**

Lotus
Working Together®

In Canada, call 1-800-GO-LOTUS. ©1996 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA 02142. All rights reserved. Lotus, Working Together and Lotus Approach are registered trademarks and SmartMaster is a trademark of Lotus Development Corporation. All other products are registered under their respective companies.